

## Supplementary material

### Pubmed

#### **Concept 1: fractures**

"Fractures, Bone"[Mesh] OR fracture\*[tiab] OR "Orthopedic Fixation Devices"[Mesh] OR fixation device\*[tiab] OR "orthopedic device"[tiab] OR "Internal Fixators"[Mesh] OR "Internal fixation"[tiab] OR "Fracture Fixation"[Mesh] OR "fracture fixation"[tiab] OR "Fracture Fixation, Internal"[Mesh] OR orthopedic implant\*[tiab] OR "fracture implant"[tiab] OR osteosynthes\*[tiab] OR nailing[tiab] OR "Fracture Fixation, Intramedullary"[Mesh] OR intramedullary nail\*[tiab]

#### **Concept 2: infection**

"infection"[MeSH Terms] OR "Bacterial Infections"[Mesh] OR infect\*[tiab] OR "bone diseases, infectious"[MeSH Terms] OR "Osteomyelitis"[Mesh] OR Osteomyelit\*[tiab] OR "fracture non-union"[tiab] OR delayed unio\*[tiab] OR nonunio\*[tiab] OR "Wound Infection"[Mesh] OR surgical site infection\*[tiab] OR Biofilm[Mesh] OR biofilm[tiab] OR osteit\*[tiab] OR Osteitis[Mesh] OR "surgical wound infection"[Mesh] OR "SSI"[tiab] OR "Pseudarthrosis"[Mesh] OR Pseudarthro\*[tiab] OR pseudoarthro\*[tiab] OR "infection after fracture fixation"[tiab] OR IAFF[tiab] OR "device-related infection"[tiab]

#### **Concept 3: diagnostic techniques**

"Microbiology"[Mesh] OR microbiolog\*[tiab] OR microbial identif\*[tiab] OR microbial detect\*[tiab] OR microbial culture\*[tiab] OR bacterium detect\*[tiab] OR "bacterium culture"[tiab] OR bacterium identif\*[tiab] OR bacterium isolat\*[tiab] OR bacteriolog\*[tiab] OR "Histology"[Mesh] OR histolog\*[tiab] OR immunohistology[tiab] OR histocytochemistry[tiab] OR cytochemistry[tiab] OR histochemistry[tiab] OR immunohistochemistry[tiab] OR immunolabeling techni\*[tiab] OR "antibody labeling"[tiab] OR immunocytochem\*[tiab] OR "In Situ Hybridization, Fluorescence"[Mesh] OR "Fluorescence in situ hybridization"[tiab] OR FISH[tiab] OR Fluorescent antibody techni\*[tiab] OR "Histocytological Preparation Techniques"[Mesh] OR Histocytological Preparation Techni\*[tiab] OR histological techni\*[tiab] OR histologic techni\*[tiab] OR Cytohistologic preparation techni\*[tiab] OR "Microbiological Techniques"[Mesh] OR culture[tiab] OR cultivation[tiab] OR histopatholog\*[tiab] OR "Polymerase Chain Reaction"[Mesh] OR "polymerase chain reaction"[tiab] OR PCR[tiab] OR "Sonication"[Mesh] OR sonicat\*[tiab] OR "bacterial growth"[tiab] OR "bacterium growth"[tiab] OR "bacterial colonization"[tiab] OR "bacterial colonisation"[tiab] OR "bacterium colonization"[tiab] OR "bacterium colonization"[tiab] OR "gram staining"[tiab] OR "Microscopy"[Mesh] OR microscop\*[tiab]

#### **Concept 4: validation**

"Sensitivity and Specificity"[Mesh] OR sensitivity[tiab] OR specificity[tiab] OR optimization[tiab] OR diagnosis[Mesh] OR diagnos\*[tiab] OR "Diagnostic Techniques and Procedures"[Mesh] OR "Predictive Value of Tests"[Mesh] OR "Predictive Value"[tiab]

#### **Concept 5: methods**

"methods" [Subheading] OR "Methods"[Mesh] OR "Evaluation Studies as Topic"[Mesh] OR "Evaluation Studies" [Publication Type] OR "evaluation study"[tiab] OR "Validation Studies as Topic"[Mesh] OR "Validation Studies" [Publication Type] OR validat\*[tiab] OR "Comparative Study" [Publication Type] OR comparative stud\*[tiab] OR "Clinical Laboratory Techniques"[Mesh] OR laboratory techni\*[tiab] OR laboratory test\*[tiab] OR "intermethod comparison"[tiab] OR "protocol"[tiab]

## **Embase**

### **Concept 1: fractures**

'fracture'/exp OR 'fracture\*':ti,ab OR 'orthopedic fixation device'/exp OR 'fixation device\*':ti,ab OR 'orthopedic equipment'/exp OR 'orthopedic equipment':ti,ab OR 'orthopedic device\*':ti,ab OR 'osteosynthesis'/exp OR 'osteosynthes\*':ti,ab OR 'fracture fixation'/exp OR 'fracture fixation\*':ti,ab OR 'internal fixator'/exp OR 'internal fixation\*':ti,ab OR 'internal fixator\*':ti,ab OR 'orthopedic implant\*':ti,ab OR 'fracture implant\*':ti,ab OR 'intramedullary nailing'/exp OR 'intramedullary nail\*':ti,ab OR 'nailing':ti,ab

### **Concept 2: infection**

'infection'/exp OR 'infect\*':ti,ab OR 'bone infection'/exp OR 'osteomyelitis'/exp OR 'osteomyel\*':ti,ab OR 'fracture nonunion'/exp OR 'fracture nonunion':ti,ab OR 'Pseudoarthrosis'/exp OR 'Pseudoarthrosis':ti,ab OR 'wound infection'/exp OR 'surgical site infection'/exp OR 'surgical site infect\*':ti,ab OR 'biofilm'/exp OR 'biofilm':ti,ab OR 'osteitis'/exp OR 'osteit\*':ti,ab OR 'surgical infection'/exp OR 'SSI':ti,ab OR 'pseudarthrosis'/exp OR 'pseudarthro\*':ti,ab OR 'device infection'/exp OR 'device infect\*':ti,ab

### **Concept 3: methods**

'Microbiology test'/exp OR 'microbiology'/exp OR 'microbiolog\*':ti,ab OR 'microbiological examination'/exp OR 'microbial identification'/exp OR 'microbial identif\*':ti,ab OR 'microbial detect\*':ti,ab OR 'microbial culture\*':ti,ab OR 'bacterium isolation'/exp OR 'bacterium isolat\*':ti,ab OR 'bacterium detection'/exp OR 'bacterium detect\*':ti,ab OR 'bacterium culture'/exp OR 'bacterium culture':ti,ab OR 'bacteriolog\*':ti,ab OR 'microbiological techni\*':ti,ab OR 'gram staining'/exp OR 'gram staining':ti,ab OR 'bacterium identif\*':ti,ab OR 'bacterium identification'/exp OR 'histology'/exp OR 'histolog\*':ti,ab OR 'histochemistry'/exp OR 'histochemistry':ti,ab OR 'histocytochemistry':ti,ab OR 'immunohistology'/exp OR 'immunohistology':ti,ab OR immunohistochemistry:ti,ab OR 'cytochemistry'/exp OR 'cytochemistry':ti,ab OR 'histocytological preparation techni\*':ti,ab OR 'cytohistologic preparation techni\*':ti,ab OR 'immunocytochemistry'/exp OR 'immunocytochemistry':ti,ab OR 'fluorescence in situ hybridization'/exp OR 'fluorescence in situ hybridization':ti,ab OR 'FISH':ti,ab OR 'fluorescent antibody technique'/exp OR 'fluorescent antibody techni\*':ti,ab OR 'immunolabeling techni\*':ti,ab OR 'antibody labeling'/exp OR 'antibody labeling':ti,ab OR 'histopathology'/exp OR 'histopatholog\*':ti,ab OR 'polymerase chain reaction'/exp OR 'polymerase chain reaction':ti,ab OR 'PCR':ti,ab OR 'sonicat\*':ti,ab OR 'bacterial growth'/exp OR 'bacterial growth':ti,ab OR 'bacterium growth':ti,ab OR 'bacterial colonization'/exp OR 'bacterial colonization':ti,ab OR 'bacterial colonisation':ti,ab OR 'bacterium colonization':ti,ab OR 'bacterium colonisation':ti,ab OR 'microscopy'/exp OR 'microscop\*':ti,ab

### **Concept 4: validation**

'sensitivity and specificity'/exp OR 'sensitivity':ti,ab OR 'specificity':ti,ab 'optimization':ti,ab OR 'diagnosis'/exp OR 'diagnos\*':ti,ab OR 'diagnostic accuracy'/exp OR 'predictive value'/exp OR 'predictive value':ti,ab

### **Concept 5: methods**

'validation study'/exp OR 'validat\*':ti,ab OR 'validation studies':it OR 'methodological studies'/exp OR 'methodology'/exp OR 'laboratory technique'/exp OR 'laboratory techni\*':ti,ab OR 'laboratory test'/exp OR 'laboratory test\*':ti,ab OR 'comparative study'/exp OR 'comparative stud\*':ti,ab OR 'intermethod comparison'/exp OR 'intermethod comparison':ti,ab OR 'evaluation study'/exp OR 'evaluation stud\*':ti,ab OR 'evaluation studies':it OR 'protocol':ti,ab

## Web-Of-Science

### **Concept 1: fractures**

fracture\* OR fixation device\* OR “orthopedic device” OR “Internal fixation” OR “fracture fixation” OR orthopedic implant\* OR “fracture implant” OR osteosynthes\* OR nailing OR “intramedullary nail\*”

### **Concept 2: infection**

infect\* OR Osteomyelit\* OR “fracture non-union” OR delayed unio\* OR nonunio\* OR surgical site infection\* OR biofilm OR osteit\* OR “SSI” OR Pseudarthro\* OR pseudoarthro\* OR “infection after fracture fixation” OR IAFF OR “device-related infection”

### **Concept 3: methods**

microbiolog\* OR microbial identif\* OR microbial detect\* OR microbial culture\* OR bacterium detect\* OR “bacterium culture” OR bacterium identif\* OR bacterium isolat\* OR bacteriolog\* OR histolog\* OR immunohistology OR histocytochemistry OR cytochemistry OR histochemistry OR immunohistochemistry OR immunolabeling techni\* OR “antibody labeling” OR immunocytochem\* OR “Fluorescence in situ hybridization” OR FISH OR Fluorescent antibody techni\* OR Histocytological Preparation Techni\* OR histological techni\* OR histologic techni\* OR Cytohistologic preparation techni\* OR culture OR cultivation OR histopatholog\* OR “polymerase chain reaction” OR PCR OR sonicat\* OR “bacterial growth” OR “bacterium growth” OR “bacterial colonization” OR “bacterial colonisation” OR “bacterium colonisation” OR “bacterium colonization” OR “gram staining” OR microscop\*

### **Concept 4: validation**

Sensitivity OR specificity OR optimization OR diagnos\* OR “Predictive Value”

### **Concept 5: methods**

method\* OR procedure\* OR “evaluation stud\*” OR validat\* OR comparative stud\* OR laboratory techni\* OR laboratory test\* OR “intermethod comparison” OR protocol