Research Annual Report 2012

Musculoskeletal Science Center (MUSC)

Immunological mechanisms and clinical epidemiology of early inflammatory arthritis and osteoarthritis
Consequences of chronic conditions and effects of interventions
Efficiency and efficacy of trauma care
Efficiency and Efficacy of Emergency medicine and Trauma Care
EMC MUSC-01-31-01 - Immunological mechanisms and clinical epidemiology of early inflammatory arthritis and osteoarthritis

Programme (brief description)

The programme investigates immunological mechanisms and the clinical epidemiology regarding onset, course and outcomes of early (rheumatoid) arthritis and inflammatory osteoarthritis (OA). It aims to find determinants for disease onset and severity and subsequently to develop predictive algorithms for diagnosis and prognosis. In the scope of the disease course the effect of various medical and non-medical interventions are studied. The molecular immunopathobiological mechanisms of onset, severity and modulation of chronic inflammatory destructive arthritis are studied with focus on the role of the IL-23/Th17 immune pathway, aging, osteoimmunology and hormones.

Key Figures

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Article/Letter to the editor


EMC MUSC-01-46-01 - Consequences of chronic conditions and effects of interventions

Programme (brief description)

Our research focuses on the consequences of complex and chronic conditions on functioning, health, and quality of life and on interventions to improve these. Our research is performed in interdisciplinary collaboration. The research usually has a direct link to clinical practice and often has a translational character. The studies are designed from a clinical epidemiological perspective and include prospective cohort studies, diagnostic studies and effectiveness research. The research group participates in the Musculoskeletal Science Centre (MUSC) of Erasmus MC and the Netherlands Institute for Health Sciences (NIHES; candidate member).

Key Figures

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Thesis

Michielsen, M.E. (2012, juni 18). Reflections on mirror therapy in stroke; mechanisms and effectiveness for improving hand function. EUR (128 pag.). Prom./coprom.: Prof. Dr. H.J. Stam, Dr. J.B.J. Bussmann & Dr. R.W. Selles.

Article/Letter to the editor


**Book - Monograph - Book Editorship**

**Part of book - Abstract**

EMC MUSC-01-47-01 - Efficiency and efficacy of trauma care

Programme (brief description)

Objectives:
The main objective of this programme is to investigate the efficiency and efficacy of management and treatment approaches for trauma patients.
The basic research projects aim at getting insight into fracture healing.
Fractures that do not heal uncomplicated often require bone grafting. Literature data of bone substitute materials available in the Netherlands will be collected. The biomechanical and biological characteristics in vivo will be determined to support a clinical guideline. New titanium MESH material will be evaluated in a biomechanical and in vivo setting.
Advanced trauma life support (ATLS) propagates the use of pelvic circumferential compression devices (PCCDs) for reducing and stabilizing pelvic fractures, however their clinical benefits and risks are largely unknown. The mechanical effects, the quality of pelvic reduction and the decubitus risk of PCCDs will be determined.
The aim of the clinical research projects is to compare management approaches for several fracture and injury types using prospective multi-centre randomized and cohort studies.
Multicenter cohort study: outcome of treatment of persistently unstable complex elbow dislocations after fracture fixation using a hinged elbow fixator will be studied.
Three projects aim at identifying patients at risk for complications:
- Patients with low single nucleotide polymorphisms in immune response genes are at risk of developing serious infectious complication after transplantation or ICU admission. This association will be investigated in polytraumatized patients.
- The second project deals with elderly patients reporting to the ED after they fell. The effects of withdrawal of fall-inducing drugs on recurrent falls will be investigated.
- Topic of the third study is to evaluate biomarkers for timely indication of intra-abdominal hypertension; this syndrome that can lead to multiorgan failure if left untreated.
An international research collaboration and exchange program with the Ruijin Hospital (Shanghai, China, Emergency Department (ED) and Burn Center) has been established.
In preclinical research projects the added value of assistance by Helicopter Emergency Medical Services (HEMS) on outcome and quality of life will be studied in polytraumatized patients.
Effects, costs and benefits will be investigated and the dispatch and cancel protocols will be evaluated.

Key Figures

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Article/Letter to the editor


**Part of book - Abstract**

EMC MUSC-01-48-01 - Efficiency and Efficacy of Emergency medicine and Trauma Care

Programme (brief description)

The main objective of this programme is to investigate the efficiency and efficacy of management and treatment approaches for trauma and emergency medicine patients. The basic research projects aim at getting insight into wound and fracture healing. Both, wounds and fractures that do not heal uncomplicated often require special treatment and grafting. Literature data on both subjects available in the Netherlands will be collected. The biomechanical and biological characteristics in vivo will be determined to support a clinical guideline. New titanium MESH material will be evaluated in a biomechanical and in vivo setting. Advanced trauma life support (ATLS) propagates the use of pelvic circumferential compression devices (PCCDs) for reducing and stabilizing pelvic fractures with improvement of vital parameters and reduction of pain as results, however their clinical benefits and risks are largely unknown. The mechanical effects, the quality of pelvic reduction and the decubitus risk and the influence on pain relieve of PCCDs will be determined.

The aim of the clinical research projects is to compare management approaches for several acute disorders and injury types using prospective multi-centre randomized and cohort studies. Multicenter RCTs: (1) Barriers and facilitators for early treatment of pain in trauma patients; (2) Clinical- an cost-effectiveness of hemi-arthroplasty versus total hip arthroplasty of femoral neck fractures; (3) Clinical- and cost-effectiveness of hemiarthroplasty versus conservative treatment of comminuted humeral fractures (4) Sterile versus clean treatment of traumatic wounds.

Three projects aim at identifying patients at risk for complications:

- Literature data indicate that patients which are at risk of developing serious infectious complication after ED admission. Early recognition and treatment of pneumonia and sepsis in the ED is an important task in saving lives and prevention of serious acute complications. This association will be investigated in infectious ED patients where also screening protocols will be validated for the situation in the Netherlands.

- The second project deals with elderly patients reporting to the emergency department for medical assessment after they fell. As these patients may be at risk for falling again, the effects of withdrawal of fall-inducing drugs will be investigated.

- Alcohol and drug intoxication among trauma patients. This is a serious problem in young but also in older- and old population. Focus on intoxication in relation to injuries will result in more specific prevention programs.

- Prevalence and characteristics of patients who frequently visit the ED. This study aims at detecting predictors for high healthcare costs involved with frequent ED visits.

In preclinical research projects the added value of intervention on outcome and quality of life will be studied in old patients. Effects, costs and benefits will be investigated and the prevention and treatment protocols will be evaluated.

Key Figures

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Article/Letter to the editor


**Part of book - Abstract**