part 3 of 3
Stroke Nursing Study Day
presented by
The Stroke Service, St. James’s Hospital
and
with thanks to
SCOPE Physiotherapy Directorate, St. James’s Hospital
SCOPE Occupational Therapy, St. James’s Hospital
SCOPE Clinical Nutrition, St. James’s Hospital
November 2009

Physiotherapy following stroke
Helen Flynn
Senior Physiotherapist, SJH
November 2009
Learning outcomes

- To understand the role of physiotherapy following stroke.
- To be aware of causes of hemiplegic shoulder pain and methods of prevention.
- To recognize the importance of positioning and know how to position a patient with acute stroke.
- To understand the term ‘Early mobilisation’.

What is Physiotherapy?

- Physiotherapy is concerned with helping to restore well-being to people following injury, pain or disability through mainly physical means.
- Following stroke, the overall aim is to help people regain functional independence in everyday tasks such as standing, walking and eating.
Initial stages

- Assessment
- Advice on positioning
- Advice on prevention of shoulder pain
- Respiratory management.
- Sitting out/ mobilising

Core areas in stroke physiotherapy

- Sitting balance
- Transfer training
- Gait re-education
- Upper limb functional rehab
- Strength, co-ordination, balance, tone etc.
- Assessment of falls risk
- Stair practice
Hemiplegic shoulder pain

- Incidence somewhere between 5% and 80%
- Severe, persistent shoulder pain in 5%
- Secondary, musculo-skeletal disorder.

Anatomy

[Diagram of shoulder anatomy with labels: Acromion, Humeral Head, Coracoid, Scapula.]

[Radiograph of shoulder showing anatomy.]
Causes of shoulder pain

- Exact aetiology unknown but in early stages, often associated with subluxation and, in later stages, with spasticity.
- Possible mechanisms:
  - Trauma
  - Rotator cuff injury
  - Altered biomechanics
  - Muscle imbalance
  - Adhesive capsulitis

  - 50% adhesive capsulitis,
  - 44% shoulder subluxation,
  - 22% rotator cuff tears,
  - 16% having shoulder-hand syndrome.
- Minimal evidence to date to support efficacious treatment.
During the acute phase, particular emphasis should be directed at prevention of shoulder pain, including the prevention of subluxation, as once present, it can be particularly problematic and no clear interventions currently exist. (A)

- Staff and caregivers should be trained to ensure that everybody handles and positions the weak arm correctly, avoiding mechanical stress (excessive range of movement, tension). (R)
- Correct positioning of the arm should be implemented, using firm arm supports, an arm trough or a lapboard in sitting. (A, N)
- Therapists should consider the use of slings for standing or walking. (D)

Positioning

Correct positioning can help to reduce the risk of:
- Aspiration
- Shoulder pain
- Contracture
- Pressure areas
- Swelling of the extremities
Aims of positioning

- Patient comfort
- Provide support to weak and unstable body segments
- Increased stimulation to affected side
- Increased spatial awareness and ability to interact with environment.

Who is responsible?

- All members of the MDT
- Nursing staff play *key* role in ensuring 24 hour adherence.
Lying on affected side

- One or two pillows for head.
- Affected shoulder positioned comfortably.
- Place unaffected leg forward on one or two pillows.
- Place pillows in front or behind to give support.

Lying on unaffected side

- One or two pillows for head.
- Affected arm forward and supported on pillow(s)
- Affected leg backwards on one or two pillows.
- Place pillow behind.
Sitting in bed

- Sitting in bed is desirable for short periods only.
- Must be upright and well supported with pillows.
- Consider extra support using pillows under arms or knees.

Lying on back (if desired)

- Place three pillows in a ‘triangle’, supporting shoulders and head.
- Place affected arm on pillow.
- Ensure feet in a neutral position.
www.chss.org.uk/publications/

- Stroke publications
- Fact sheets

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**Early mobilisation.**

- “the act of getting a patient to move in the bed, sit up, stand, and eventually walk.”
- People with acute stroke should be mobilised as soon as possible within the first 3 days after stroke (when their clinical condition permits).
- Requires early assessment and communication between multi-disciplinary team.
Top tips for Standing

- Hands must push off from bed/chair – do not allow patient to hold onto frame/stick.
- **Never** pull or lift patient using the affected arm.
- Consider use of sling if arm is completely flaccid.
- Think about foot placement, hand and buttock position and use of momentum/verbal cues.

Key Points

- **Never**, ever lift a patient using their affected shoulder!
- Use pillows, lots of them!
- Sit patient out as early and as often as possible (in conjunction with MDT).
The Role of Occupational Therapy in Stroke

Maura Hopkins
Senior Occupational Therapist

ROLE OF OT

• Works to help the person to become as independent as possible in activities of daily living
FOCUS OF PRESENTATION

• Positioning and Seating
• Pressure Care
• Splinting
• Personal ADL’s
• Cognition and Perception
• Discharge Planning

EARLY INTERVENTION

• This intervention will focus on three main areas:
  – Positioning and Seating
  – Pressure Relief
  – Upper Limb Positioning
SEATING

• It is vital that as soon as the person is capable of sitting out he/she is facilitated to do so

• Sitting out is essential to build up tolerance; provide maximum stimulation; give a sense of normality

PROPER POSITIONING

• Head over Pelvis
• Hips at 90 degrees
• Knees at 90 degrees
• Slight extension of lumbar region
• Feet in neutral position and supported
• Weight evenly distributed between both buttocks
• Arm should be protracted forward and supported
SITTING/LYING…. What are the differences?

- When seated, nearly half of the body weight is supported on 8% of the sitting areas at or near the ischial tuberosities (Crow, 1988)
- Therefore, interface pressures are much higher in sitting than lying.

DISTRIBUTION OF WEIGHT WHEN SEATED NORMALLY

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buttocks &amp; Thighs</td>
<td>75%</td>
</tr>
<tr>
<td>Feet flat on floor</td>
<td>19%</td>
</tr>
<tr>
<td>Back</td>
<td>4%</td>
</tr>
<tr>
<td>Arms</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>
PRESSURE RELIEF

• A person who has had a stroke may be susceptible to developing pressure sores
• Assess the person and decide on an appropriate cushion to use in order to:
  – Prevent further skin breakdown,
  – To assist with healing
  – To facilitate the patient to sit out as much as possible
PRESSURE MAPPING OF POSTERIOR PELVIC TILT
PELVIC OBLIQUITY

UPPER LIMB POSITIONING

- Correct positioning is vital to prevent shoulder trauma, pain, reduce swelling, encourage independence in feeding and other activities.
SPLINTING

- Maintenance of joint integrity
- Prevention of muscle and soft tissue contractures
- Reduction of hypertonicity
- Pain Management
- Management of skin breakdown
- Oedema management
- Maintenance of an acceptable appearance of hand and arm

EXAMPLE OF SPLINTS
Occupational Therapy in Later Stages

• In later stages, assessment may cover areas such as:
  – Functional mobility and transfers;
  – Cognition
  – Perception
  – Personal and Domestic Activities of Daily Living
  – Discharge Planning

PERSONAL ADL’S

• Feeding, washing, dressing, toileting, grooming, transferring, and mobilising

• Major component of assessment and treatment

• Important measure of the success of stroke rehabilitation and a commonly used outcome in stroke trials.
TIPS FOR DRESSING

• When dressing, always put clothing on the affected side first. When undressing, always take clothes off the affected side last.
• Clothing that must be pulled over the head may be difficult to manage.
• Lay out clothes in the order they will be put on.
• Putting on clothes is easier when sitting than when lying down.

COGNITION

• Mental processes that allow us to recognise, learn, remember, and attend to changing information in the environment
COGNITION INVOLVES..

- Attention
- Memory
- Initiation
- Planning/Organising
- Mental Flexibility
- Problem Solving
- Mental Flexibility
- Abstraction
- Insight
- Reasoning
- Judgment

PERCEPTION

Making sense of the senses

- Spatial awareness
- Figure Ground Discrimination
‘NEGLECT SYNDROME’

• Failure to attend to one side of space (usually left)

• Involves both attention and visuospatial ability

HOME ASSESSMENT

• A home assessment may be carried out where potential difficulties are identified.

• It provides the opportunity to look at many issues including:
  – Safety
  – Independence
  – Access
  – Confidence
THANK YOU

The Role of the Clinical Nutritionist in Stroke

Donna Tynan
Clinical Nutritionist, SJH
Stroke

- In Ireland –
  - 3rd largest cause of premature death
    - After Cancer & Cardiovascular Disease
  - Affects 10,000 people annually
  - 30,000 people currently living with stroke (CSO 2005)

- In US -
  - On average, every 40 seconds, a person has a stroke
  - Prevalence of stroke was 5,800,000 (2005) (AHA, 2008)

Stroke

- Residual Disabilities –
  - Hemiparesis (48%)
  - Inability to Walk (22%)
  - Need for Help with ADL (24-53%)
  - Clinical Depression (32%)
  - Cognitive Impairment (33%)

(Council on Stroke, IHF, 2001)
Recovery

- **Dependent Upon** -
  - **Type**
    - Cerebral Ischaemia
    - Cerebral Haemorrhage
  - **Extent**
  - Level of Recovery in **Rehab**
  - Remaining **Disability**
  - Pre-existing **Comorbidities**

Who Should be Involved?

- Medical Staff
- Nursing Staff
- **Clinical Nutrition**
- Occupational Therapy
- Physiotherapy
- Social Work
- Speech & Language Therapy
- Pharmacy

*(Canadian Guidelines, 2006)*
Role of the Clinical Nutritionist

- Screening Patients
- Assessing Patients
- Advising Patients
  - Food Fortification, ONS, Modified Consistency, EN, PN, Weight Management
- Monitoring and Modifying
  - Patients
  - Care Plans
- Facilitating Discharge

Role of the Clinical Nutritionist

- Training Healthcare Professionals
  - Nutritional Screening
  - Management of Patients at Risk of Malnutrition
  - Primary/Secondary Prevention of Stroke
- Raising Awareness
  - Impact of Malnutrition on Stroke Recovery
  - Managing Co-Morbidities
  - Primary/Secondary Prevention of Stroke
- Ethics
  - Enteral & Parenteral Nutrition in Stroke Patients
Nutritional Implications of Stroke

- Dysphagia
- Malnutrition
- Weight Loss
- Constipation
- Weight Gain
- Co-Morbidities
  - Diabetes Mellitus
  - Hypertension
  - Hypercholesterolaemia

Dysphagia

- Dysphagia
  - 29-45% - Acute Phase
  - 47% - Rehabilitation (2-3 Weeks post Stroke)
  - 17% - 2-4 Months Follow Up

- Up to 29% →
  - Recovered Swallow
  - Resume Full Oral Nutrition
  - May Take up to 31 Months

(The Lancet, 2000)

(ESPEN 2006)
Dysphagia

- Reduced Oral Intake
- Malnutrition
- Respiratory Infections
- Pneumonia
- Dehydration

Modified Consistencies

- Present Guidelines (SJH)
  - Liquids
    - Free
    - Syrup
    - Yoghurt

- INDI Guidelines
  - Solids
    - Normal
    - Soft
    - Semi Solid
    - Puréed
    - Liquidised
    - Set
FOOD Trials

- ~ ½ Stroke Patients
  → Initial Dysphagia

- Nasogastric Feeding – Early Initiation
  - ↓ Fatality
  - Improves Nutrition
  - Improves Recovery

(The FOOD Trial Collaboration, 2005)

Enteral Nutrition

- Nasoenteral Feeding
  - Nasogastric
  - Nasoduodenal
  - Nasojejunal

- Gastrostomy Feeding
  - Percutaneous Endoscopic Gastrostomy (PEG)
  - Radiologically Inserted Gastrostomy (RIG)
  - Button Gastrostomies

- Jejunostomy Feeding
  - Surgically Placed Jejunostomy
  - Percutaneous Endoscopic Jejunostomy (PEJ)
  - Radiologically Inserted Jejunostomy (RIJ)
  - Jejunal Extension Tubes (PEGJ)

- Duodenostomy Feeding
  - Percutaneous Endoscopic Duodenostomy
Parenteral Nutrition

- Provision of Nutrition into the Venous System
  - Protein: Amino Acid Solution
  - Carbohydrate: Dextrose Solution
  - Fat: Lipid Emulsion

- Only for use when -
  - Enteral Nutrition Inappropriate

Nutritional Implications of Stroke

- Dysphagia
- Malnutrition
- Weight Loss
- Constipation
- Weight Gain
- Co-Morbidities
  - Diabetes Mellitus
  - Hypertension
  - Hypercholesterolaemia
Malnutrition – What is it?

- A state of nutrition in which a **deficiency** or **excess** of energy, protein, and other nutrients causes **adverse effects** on clinical outcome, body form and function (MAG, 2000)

- Malnutrition can be a cause **or** a result of illness

Malnutrition - Prevalence

**Hospital**

- 11% patients on admission,
- 62% lost weight during hospital stay (Corish *et al.*, 1998)
- 40% patients on admission,
- 2/3 patients lost weight during hospital stay (McWhirter & Pennington, 1994)

**Community**

- 3.2 million patients at risk of malnutrition (MAG, 2009)
Factors Affecting Dietary Intake

- Medical Procedures
- Dysphagia
- Health Status
- Portion Sizes
- Meal Times
- Environmental Factors
- Lack of Staff
- Poor Memory
- Altered Taste/Smell
- Limited Catering Budgets
- Catering Systems
- Menu Orders Required >24 hrs in Advance
- Cognitive Impairment
- Inappropriate Utensils

Signs of Malnutrition

- Loose Fitting Clothes or Jewellery
- Ill Fitting Dentures
- Recent Loss of Appetite
- Recent Un-Intentional Weight Loss
- Muscle Wasting
- Delayed Healing
- ↓ Albumin
Consequences of Malnutrition

- Delayed Recovery
- Increased Morbidity & Mortality
- Increased Risk of Infection
- Increased Risk of Wounds
- Increased Apathy/Depression
- Reduced QOL
- Weakness & Fatigue
- Impaired Thermoregulation
  - → Longer Hospital Stay
  - → Increased Hospital Costs
  - → Increased Frequency of Readmission

Obesity – Definition & Prevalence

- **Obesity =**
  - BMI $30\text{kg/m}^2$ or greater

- **Obesity in Ireland**
  - 20% men and 16% women are obese

- **67% Increase in Obesity Levels**
  - Over last decade

*Obesity & Malnutrition are not mutually exclusive*
Malnutrition & Stroke

- 15% on Admission
- 30% over First Week of Recovery Post Stroke
  (Royal College of Physicians)

- Malnutrition is Common
- Worsens within the First 2 Weeks after Stroke
- Affects Outcome
  (Gariballa, 1998)

Stroke & Causes of Malnutrition

- Reduced Conscious Level
- An Unsafe Swallow
- Arm or Facial Weakness
- Poor Mobility
- Ill Fitting Dentures
- Apraxia
- Agnosia
- Depression
Nutrition Support - Routes

- Oral
  - Food Fortification
  - Oral Nutritional Supplements

- Enteral Nutrition
  - Supplementary
  - Complete

- Parenteral Nutrition
  - Gut Inaccessible
  - Non Functioning Gut

Enteral Feeding in Stroke

- Early Tube Feeding
  - ↓ Case Fatality
  - ↑ Proportion Surviving with Poor Outcome

  (The Food Trial Collaboration, 2005)

- PEG – Useful for Patients with -
  - Stroke and Post-Traumatic Brain
  - Dysphagia
  - Malnutrition

- Helps -
  - Avoid Deterioration of Nutritional Status
  - Can Improve QOL

  (Liu & Li, 2008)
**Screening - MUST**

- **Five step** screening tool
- Can detect **under-nutrition and over nutrition** but not designed to detect micro-nutrient deficiencies
- Is linked to a **flexible care plan**
- Can be used for all **types** of adult patient in all care settings by all health workers
- Validated, reliable and practical

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### The MUST Tool

#### (i) BMI (kg/m²)

- 0 = <20.0
- 1 = 18.5-20.0
- 2 = <18.5

#### (ii) Weight loss in 3-6 months

- 0 = <5%
- 1 = 5-10%
- 2 = >10%

#### (iii) Acute disease effect

Add a score of 2 if there has been or is likely to be no or very little nutritional intake for >5 days

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#### OVERALL RISK OF UNDERNUTRITION *

- **0 LOW**
- **1 MEDIUM**
- **2 or more HIGH**

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**ROUTINE CLINICAL CARE**

- Repeat screening
- Hospital - every 6 months
- Community - every year for special groups, e.g. those >75y

**OBSERVE**

- Hospital - document dietary and fluid intake for 3 days
- Care homes (as for hospital)
- Community - Repeat screening, e.g. from 'time to time' with dietary advice if necessary

**TREAT**

- Hospital - refer to dietitian or implement local policies, generally fixed first followed by food fortification and supplements
- Care homes (as for hospital)
- Community (as for hospital)

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* If height, weight or weight loss cannot be established, use documented or recalled values (if considered reliable). When measured or recalled height cannot be obtained, use knee height as surrogate measure.

- If either can be estimated, assign an overall impression of undernutrition risk low, medium, high using the following:
  1. **Clinical impressions** (very thin, thin, average, overweight)
  2. **Obesity and morbid obesity**
  3. **History of decreased food intake, loss of appetite or dysphagia**
  4. **Underlying illness or psycho-social factors**

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* *Involves treatment of underlying condition, and help with food choice and aiding when necessary (also applies to other categories).
MUST Audit – SJH (2009)

- Acute Elderly Wards
- 57% Patients Screened
- 12% → Underweight
- Based on MUST Scores -
  - 23% → High Risk
  - 15% → Medium Risk
  - 61.4% → Low Risk
- Referrals ↑ 31% with Nutritional Screening

Nutritional Implications of Stroke

- Dysphagia
- Malnutrition
- **Weight Loss**
- Constipation
- Weight Gain
- Co-Morbidities
  - Diabetes Mellitus
  - Hypertension
  - Hypercholesterolaemia
Weight Loss

- Dysphagia
- Reduced Oral Intake
- Reduced Manual Dexterity
- Dependence Upon Others
- Reduced Mobility
- Apraxia
- Agnosia

Nutritional Implications of Stroke

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**Constipation**

- **Constipation**
  - 60% in Stroke Rehabilitation Wards
  - Can lead to faecal incontinence

- **Prevalence in Stroke Patients**
  - 30% to 60%
  - New-Onset Constipation → 55.2%
  (4 Weeks Post Stroke)

- **Constipation Affects Oral Intake**

  (Harari et al, 2004)

**Constipation**

- **Causes**
  - Impaired Mobility
  - Dehydration
  - Polypharmacy
  - Dietary Factors
  - Age

- **Dietary Measures**
  - ↑ Fibre
  - ↑ Fluids
  - ↑ Physical Activity

  (Yongjing et al, 2009)
Nutritional Implications of Stroke

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- **Weight Gain**
- Co-Morbidities
  - Diabetes Mellitus
  - Hypertension
  - Hypercholesterolaemia

Weight Gain

- Usually in Rehabilitation Phase
- **Causes** -
  - Clinical Depression
  - Sleep Disturbances
  - Change in Eating Pattern
  - Lethargy & Fatigue
  - Social Withdrawal
  - Reduced Mobility
Obesity & Stroke Risk

- Important in Primary & Secondary Prevention
- Obesity ↑ Risk of Stroke
- Abdominal Obesity ↑ risk further

(American Stroke Association, 2003)

In Ireland
- Waist Circumference
  - >80cm (32inches) → Women
  - >94cm (37inches) → Men
  → Indicates Abdominal Obesity

(International Diabetes Federation)

Obesity

- Overweight & Obesity
  - Hypertension
  - Type II Diabetes
  - Excess Cholesterol
  - Stroke
  - Cardiovascular Disease
  - Gallstones
  - Gout
  - Complications of Pregnancy
  - Obstructive Sleep Apnoea
  - Respiratory Problems
  - Types of Cancer
  - Bladder Control Problems
  - Psychological Disorders
  - Osteoarthritis
Nutritional Implications of Stroke

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Diabetes Mellitus

- Diabetes Mellitus →
  - Modifiable Risk Factor
  - May be Diagnosed after Stroke

  Aim -
  - HbA1c → <7%
  - BMs → ~6mmols/l or less

- 1st Diet & Exercise
- 2nd Diet & OHA
- 3rd Diet & Insulin

(American Heart Association, 2002)
**Hypertension**

- HTN
  - ↑ Stroke Risk
  - Modifiable Risk Factor
  - Important in Primary & Secondary Prevention
    (Gupta & Agrawal, 2009)

- (Collins et al, 1990)
  - Diastolic Blood Pressure >90mmHg
  - 5-6mm Reductions
  - Stroke ↓ 42%

**Dietary Modification**

- ↓ Salt
- ↓ Alcohol
- Weight Loss
- ↑ Exercise

**Hyperlipidaemia**

- Hyperlipidaemia → Risk Factor for Stroke
  - Total Cholesterol <5.2 mmol/l
  - HDL: 1-2.1mmol/l
  - LDL: 2-3.36mmol/l
  - Triglycerides: 0.5-2mmol/l

- ↓ Fat
- ↓ Dietary Cholesterol
- ↑ Physical Activity

(American Heart Association, 2002)
(Sever et al, 2003) *The Lancet*

**Atorvastatin Vs Placebo**
- Fatal & Non Fatal Stroke
- Cardiovascular Events
- Cholesterol
  → Significantly Lowered

Where is the Clinical Nutritionist Involved?
- Primary Prevention
- Acute Setting
- Rehabilitation
- Secondary Prevention
Primary Prevention

- Health Promotion
  - Irish Heart Foundation
  - School Programs
- Advising Patients Prior to Stroke
  - ↓ Cholesterol
  - ↓ Weight
  - ↓ Controlling Diabetes Mellitus
  - ↓ Blood Pressure
  - Cut Smoking
  - ↑ Exercise
  - ↓ Salt
  - ↓ Fat
  - ↓ Sugar
  - ↓ Alcohol
  - ↑ Fibre
  - ↑ Fruit & Vegetables
  - ↑ Omega 3’s

Acute Setting & Rehabilitation

- Food Fortification
- Oral Nutritional Supplements
- Modified Consistency Diets
- Enteral Nutrition
- Weight Management Advice
Secondary Prevention

- Ideally Qualified to Advise on –
  - Secondary Prevention
  - Dietary Adaptations
  - ↓ Hyperlipidaemia
  - ↓ Hypertension
  - Controlling Diabetes Mellitus

- May be Delivered –
  - 1:1
  - Group Sessions
  - Training other Healthcare Professionals (BDA, 2007)

Basic Guidelines for Heart Health

- ↓ Blood Pressure
- ↓ Alcohol Consumption
- Quit Smoking
- Weight Management
- ↑ Physical Activity
- Blood Lipid Management
- Diabetes Mellitus Management

- Dietary Intake
  - ↑ Fruit & Vegetables
  - ↑ Oily Fish
  - ↓ Fat
  - ↑ Fibre
  - ↓ Salt
Importance of Referral

Referral for -

- Dysphagia
- Nutrition Support
- Weight Loss
- Malnutrition
- Constipation
- Poorly Controlled Diabetes
- Poor Appetite
  - Reduces Nutritional Risk
  - Improves Rehabilitation Potential
  - Reduces Risk of Reoccurrence of Stroke

Nutrition Follow Up - Stroke Patients

- Outpatient Department
- Day Hospitals
- Community Referrals
- Specified Stroke Units
  - In Ireland
    - 3% of Hospitals
  - In UK
    - 91% of Hospitals

(Intercollegiate Working Party for Stroke Sentinel Audit UK 2006)
Conclusion

- Diet & Nutrition
  - Important Role
- ↑ Awareness
  - Primary Prevention
  - Secondary Prevention
  - Modifiable Risk Factors
- ↑ Services

Thank You