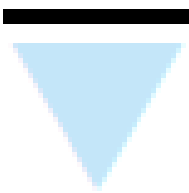


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# NEUROMUSCULAR DISEASES

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**DISAMPAIKAN DALAM MINI LECTURE BLOK DS<sub>3</sub> OLEH:  
DRG. INDAH SUASANI WAHYUNI, SP.PM**

▼ **CEREBROVASCULAR DISEASE**

Epidemiology and Etiology

Clinical Manifestations

Diagnosis

Treatment

Oral Health Considerations

▼ **MULTIPLE SCLEROSIS**

Epidemiology and Etiology

Clinical Manifestations

Diagnosis

Treatment

Oral Health Considerations

▼ **ALZHEIMER'S DISEASE**

Epidemiology and Etiology

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Diagnosis

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Oral Health Considerations

▼ **SEIZURE DISORDERS**

Epidemiology and Etiology

Clinical Manifestations

Diagnosis

Treatment

Oral Health Considerations

▼ **PARKINSON'S DISEASE**

Epidemiology and Etiology

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▼ **MYASTHENIA GRAVIS**

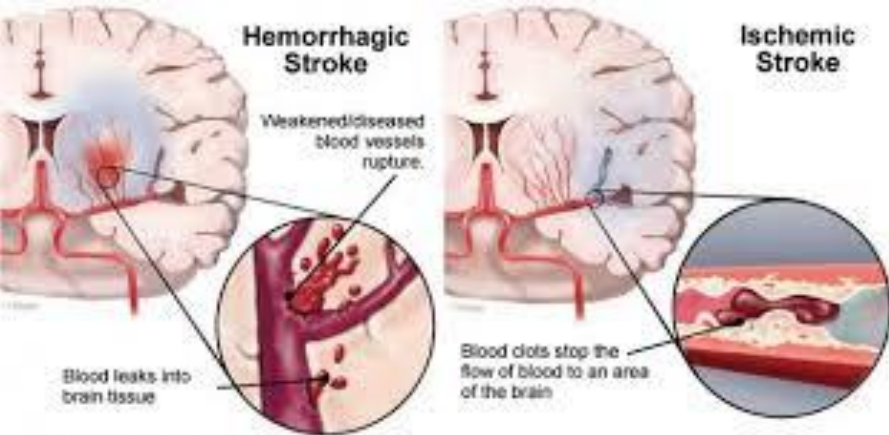
Epidemiology and Etiology

Clinical Manifestations

Diagnosis

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Oral Health Considerations



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# F A S T

FACE DROOPING | ARM WEAKNESS | SPEECH DIFFICULTY | TIME TO CALL 911

Is it a stroke? Check these signs **FAST!**

Face	Arm	Speech	Time
<p>Does the face look uneven? Ask them to smile.</p>	<p>Does one arm drift down? Ask them to raise both arms.</p>	<p>Is it "New" or "Nev"? Does that speech sound strange? Ask them to repeat a phrase.</p>	<p>Every second, brain cells die. Call 9-1-1 at any sign of stroke!</p>

Act **FAST**. Call 9-1-1 at any sign of stroke!

Massachusetts Department of Public Health

## Risk factors



# ...stroke ~ oral consideration

- Setelah stroke → problem oral → **Paralisis otot mastikasi & fasial**, kurang atau hilangnya sensasi sentuh dan rasa, refleks muntah <<, disfagia → **food intake << → nutrisi << → BB <<**.
- Penurunan fungsi gerak pengunyahan dan otot fasial (atau kombinasi dengan gangguan gerak ekstremitas → pembersihan mulut dari makanan << → **oral hygiene <<, resiko caries & penyakit periodontal >>**
- Diperlukan **teknik oral hygiene** yang kreatif dan efektif, misal: oral antimicrobial rinse, oral irrigation, floss holders → oral health promotion dan pencegahan penyakit. + pemeriksaan kontrol berkala + profilaksis.
- **Removable & fixed prosthesis penting** untuk membantu pengunyahan dan diet.
- Perawatan dental ditunda sampai 6 bulan sesudah stroke, karena ada kemungkinan serangan kedua pada H+90.

# ...stroke ~ oral consideration

- **Antiplatelet & anticoagulant**: untuk pasien dengan riwayat stroke, TIA, & RIND → misal: aspirin, oral antiplatelet drugs (ticlopidine & clopidogrel), heparin subcutaneous (low molecular weight) & warfarin → **gangguan hemostasis >>**.
- **NSAID** → **resiko perdarahan >>**.
- **Interaksi obat** potensial: metronidazole, erythromycin & tetracycline → mempengaruhi bioavailability warfarin.
- **Penurunan Stress** → penting mencegah peningkatan BP → pasien harus nyaman & kecemasan << → bisa dipergunakan Inhalasi Pre- / perioperative N2O-O2 / oral anxiolytic.
- **Anestesi lokal** mengandung epinephrine: bukan KI mutlak → digunakan minimalis saja, untuk pasien peny. CV dihindari.
- **Monitor BP** setiap kunjungan dan jika kunjungannya lama dan stress >>.

# MULTIPLE SCLEROSIS (MS)

is an autoimmune disease that affects the

**CENTRAL NERVOUS SYSTEM**



Researchers believe that MS causes the body's immune system to attack **MYELIN**, an insulating coating around nerve cells.



## MS Symptoms

**78.8%** Numbness, tingling

**58.7%** Headache

Dizziness **41.8%**

**49%** Cognitive dysfunction

Vision problems **38.9%**

**50%** Depression

Emotional changes **58.9%**

**35.7%** Speech/swallowing problems

Memory loss **15.2%**

**18.1%** Breathing problems

Pain **63.2%**

**11.5%** Fatigue

Bladder dysfunction **50.8%**

**31.3%** Sexual dysfunction

Bowel dysfunction **26%**

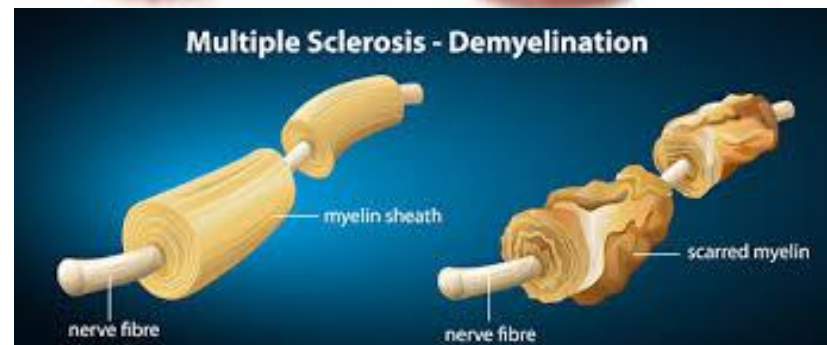
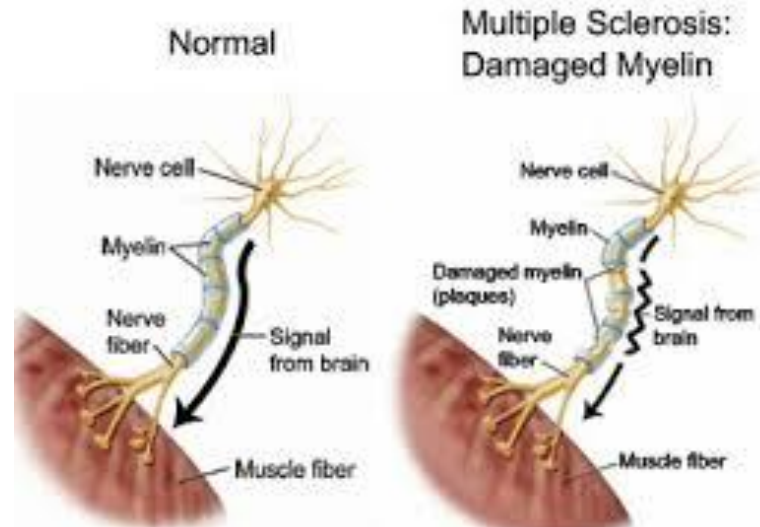
**66.8%** Muscle spasms

Seizures **3.3%**

**35.4%** Itching

Tremor **28.9%**

**78.1%** Walking difficulty



# ...multiple sclerosis ~ oral cons.

- Karakteristik Trigeminal neuralgia (TGN): *electric shock-like pain* → mungkin merupakan manifestasi awal MS (0.3% kasus)
- MS-related TGN mirip dengan idiopathic TGN → Bab orofacial pain → trigger zone (-), nyeri berlanjut dengan intensitas rendah.
- Pasien MS: neuropathy maksila (V2) dan cabang mandibula (V3) saraf trigeminal (V) → burning, tingling, dan atau sensasi <<.
- Neuropathy N.mental → baal (numbness) bibir bawah dan dagu.
- Myokymia pada pasien MS: kontraksi cepat dan sekejap otot facial karena lesi MS pada N. facial (kedutan involunter), kelemahan fasial dan paralysis, dysarthria.
- Jika diduga pasien memiliki MS → evaluasi fungsi N.cranial → abnormal → neurologis.

# ...multiple sclerosis ~ oral cons.

- Pada saat **eksaserbasi akut**: perawatan dental **ditunda** → kemungkinan pergerakan terbatas dan masalah pernafasan/airway.
- Evaluasi level disfungsi motorik → disfungsi berat → **terapi dental di ruang operasi (general anesthesia)**.
- **Electric toothbrushes & produk oral hygiene** dengan pegangan besar perlu untuk membantu menjaga oral hygiene pasien dengan gangguan motorik berat.

Healthy Brain

Severe Alzheimer's



Less of memory



Language problems



Difficulty in doing simple tasks



Disorientation in time and space



Loss of reasoning capacity



Difficulty in having elaborate thoughts



Loss of objects



Mood changes



Behavioural changes



Loss of initiative

## Dementia. Alzheimer's. What's the difference?

Dementia	Alzheimer's
Word for a group of Symptoms caused by disorders that affect the brain.	Progressive, degenerative disorder that attacks the brain's nerve cells and neurons.
Not a specific disease	Results in loss of memory, thinking and languages skills.
Affects the ability to remember how to execute certain daily tasks.	Often results in behavioral changes



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### Mild Cognitive Impairment

Duration: 7 years

Disease begins in Medial Temporal Lobe



Symptom: Short-term memory loss

### Mild Alzheimer's

Duration: 2 years

Disease spreads to Lateral Temporal and Parietal Lobes



Symptoms Include:  
Reading problems  
Poor object recognition  
Poor direction sense

### Moderate Alzheimer's

Duration: 2 years

Disease spreads to Frontal Lobe



Symptoms Include:  
Poor judgment  
Impulsivity  
Short attention

### Severe Alzheimer's

Duration: 3 years

Disease spreads to Occipital Lobe



Symptoms Include:  
Visual problems



# ...alzheimer's disease ~ oral cons.

- AD → masalah kesehatan gigi dan mulut → **provider harus dapat mengenali S&S AD** → refer untuk tatalaksana medis selanjutnya jika perlu.
- Pasien AD: **stress dengan lingkungan sekitar/ instruksi/ pertanyaan yang tidak dimengerti** (misal saat anamnesis) → empathy dan menjelaskan dengan komunikasi yang baik.
- **Aggressive preventive dentistry program** → pemeriksaan oral, oral hygiene education, prosthesis adjustment, dan kontrol berkala 3 bulan sekali.
- Selesaikan restorasi dental pada fase awal AD → selanjutnya akan sulit kooperatif karena gangguan kognisi.
- Terapi dental pada AD berat **hindari** yang membutuhkan **banyak waktu dan terlalu rumit/kompleks**.
- Medikasi AD → reaksi orofacial yang bervariasi dan kemungkinan interaksi obat (+).

# ...alzheimer's disease ~ oral cons.

- Cholinesterase inhibitors → **sialorrhea**, Namun antidepressants & antipsychotics → **xerostomia, dysgeusia & stomatitis**.
- Antimikroba: **clarithromycin, erythromycin & ketaconazole** → mengganggu metabolisme galantamine → **cholinergic effects sentral dan perifer**.
- Anticholinesterases → **iritasi GIT** >> & perdarahan jika disertai penggunaan NSAIDs.
- Peningkatan level merkuri pada otak pasien AD → **Mercury diduga sebagai penyebab perkembangan AD** → **neurotoksin** → hati-hati penggunaan dental amalgam (berperan dalam berbagai pathogenesis penyakit neurologi) → penelitian lebih lanjut tentang hubungan mercury dengan AD.

**Epilepsy** is a neurological disorder caused by malfunctioning nerve cell activity in the brain. These malfunctions cause episodes called **seizures**.



## PATHOPHYSIOLOGY (CONT.)

the electrical discharges of a large number of cells become abnormally linked together



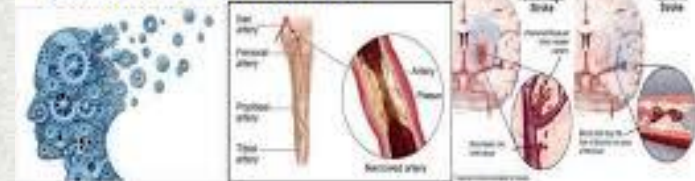
creating a storm of electrical activity in the brain



Seizures may spread to involve adjacent areas of the brain or through established anatomic pathways to other distant areas

## RISK FACTORS

- Age
- Family history
- Stroke
- Other vascular diseases
- Dementia
- Seizures in childhood.



## First Aid for Seizures

(Convulsions, generalized tonic-clonic, grand mal)



Cushion head, remove glasses



Loosen tight clothing



Turn on side



Time the seizure with a watch



Don't put anything in mouth



Look for I.D.



Don't hold down



As seizure ends...



...offer help

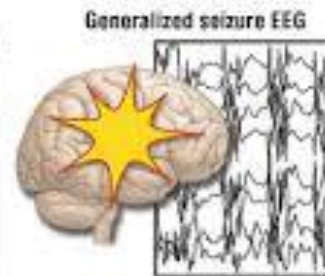
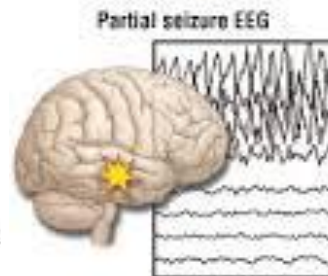
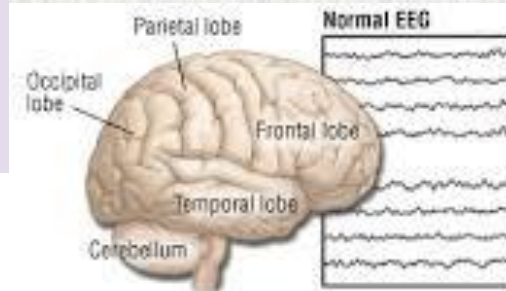
Tonic phase



Clonic phase



ADAM



# ...seizure disorders ~ oral cons.

- Evaluasi lengkap pada pasien dengan seizure disorders penting dilakukan sebelum perawatan dental apapun. → **mengetahui stabilitas kondisi.**
- Perhatikan: tipe, etiologi, frekwensi trigger, tanda-tanda aktifitas seizure, dan riwayat luka karena aktifitas seizure.
- **Uncontrolled seizure disorder** → **S&S seperti gigi fraktur atau laserasi jaringan lunak** → konsultasi dengan dokter/ neurologis → perawatan dental rutin di **RS.**
- Pasien dengan implan stimulator N.Vagus → **tidak perlu profilaksis antibiotik** untuk prosedur dental invasif → cegah pemicu yang diketahui membangkitkan seizure.
- Jika seizure tak terkontrol dipicu stress → **sedasi sebelum terapi** (diskusikan dengan dokter pasien).

# ...seizure disorders ~ oral cons.

- **Meminimalkan resiko luka dan aspirasi:** gunakan dental floss-secured mouth props & rubber dam.
- Metal fixed prosthesis lebih direkomendasikan drpd removable prosthesis → menurunkan resiko displacement & aspiration selama aktifitas seizure.
- Anticonvulsant: memicu significant **blood dyscrasias**.
- Phenytoin, carbamazepine, & valproic acid → **bone marrow suppression**, leukopenia, thrombocytopenia, & secondary platelet dysfunction → **infeksi mikroba >>**, **delayed healing**, **perdarahan gusi dan post operasi**.
- **Evaluasi lab sebelum terapi dental:** complete blood count (CBC) dengan hitung jenis leukosit, koagulasi platelet, dan kemampuan pembekuan.
- Long-term carbamazepine → kadar serum darah sebelum terapi dental → karena dosis << menurunkan kontrol aktifitas seizure & dosis >> resiko hepatotoxicity.

# ...seizure disorders ~ oral cons.

- Aspirin & NSAID: dihindari pada pasien yg konsumsi valproic acid → **resiko perdarahan >>**
- Anestesi lokal tidak ada Kontra indikasi (jumlah secukupnya) .
- **Gingival overgrowth: komplikasi oral signifikan** pada pasien seizure yang mendapatkan anticonvulsant (phenytoin) → prevalensi bervariasi > 50%.
- Permukaan labial gusi anterior RA –RB: paling sering terkena 2-18 bulan sesudah mulai terapi → secara histologis: peningkatan jumlah fibroblasts pada jaringan ikat gusi → Phenytoin mempengaruhi jalur sinyal yang mengontrol **degradasi fibroblasts gusi dan akumulasi collagen** → gingival overgrowth (+) → inflamasi memperparah → pembersihan berkala oleh profesional, menggunakan electric toothbrush, obat kumur chlorhexidine dan/atau asam folat → menjaga kebersihan mulut, inflamasi gusi pada pembesaran tsb <<.

# ...seizure disorders ~ oral cons.

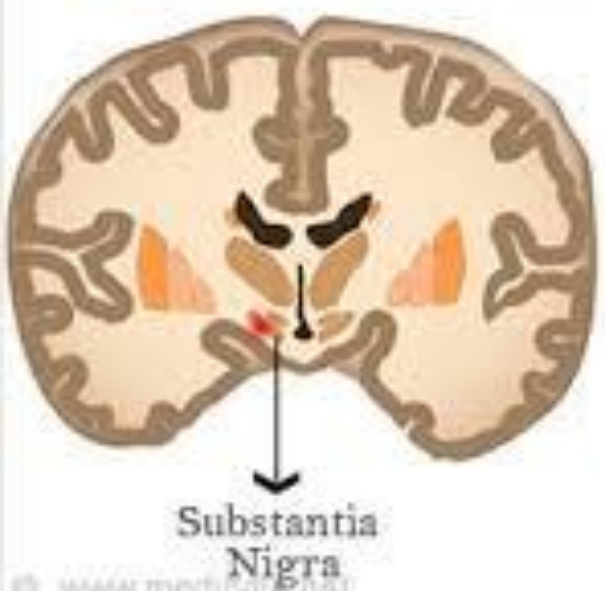
- Jika pembesaran gusi signifikan → **pembedahan**.
- **Efek samping lain** phenytoin: lesi intra oral seperti lesi lupus dan pembesaran bibir.
- Antiseizure medications → **Xerostomia** → observasi **mencegah karies** (jika perlu aplikasi dengan Topical fluoride) dan **oral candidiasis** (jika terjadi diberikan antifungal).

# Parkinson's Disease

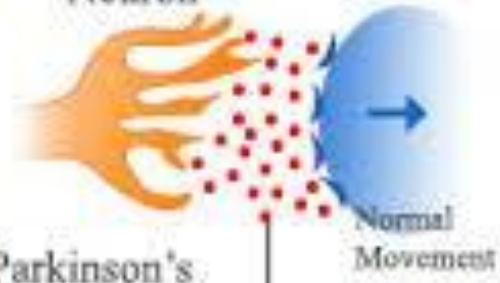
Parkinson's disease is a nervous system disorder, which affects a person's movements and continues to gradually worsen



## PARKINSON'S DISEASE



Normal Neuron



Parkinson's Affected Dopamine Neuron



Blank facial expression

Forward tilt to posture

Slow, monotonous, slurred speech

Reduced arm swinging

Rigidity and tremor of extremities and head

Short, shuffling gait



# ...parkinson's disease ~ oral cons.

- Pasien dengan PD harus dirawat dengan **posisi relatif tegak (relatively upright position)** → kesulitan pada prosedur kompleks rahang atas/bagian posterior.
- Tremor dan dyskinesia karena obat → menyulitkan prosedur → teknik behavioral manajemen → **menurunkan kecemasan** → teknik memeluk (cradling techniques).
- Dysphagia dan refleks muntah >> → **resiko aspirasi cairan mulut & irigasi → suction.**
- Beberapa pasien mengalami sialorrhea → menjaga daerah kering sulit saat prosedur operatif dan bedah.
- **Th/ PD: Levodopa & dopamine agonists** → orthostatic hypertension & hipertensi berat, oromandibular & facial dyskinesia, xerostomia, arrhythmia, & blood dyscrasias → **monitor BP, posisi tubuh.**

# ...parkinson's disease ~ oral cons.

- Xerostomia & resiko karies → diturunkan dengan: **hygiene, sealants & fluorides.**
- Oromandibular dyskinesia berpengaruh pada disain prothesa.
- Diperlukan pemeriksaan complete blood count (CBC) rutin → deteksi drug-related hematologic adverse effects.

# Myasthenia Gravis

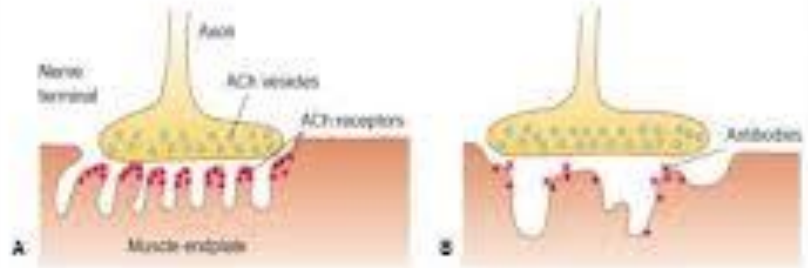


## DEFINITION:

**Myasthenia gravis** (abbreviated as **MG**) is an **autoimmune neuromuscular disease** leading to fluctuating muscle weakness and fatigability. It is a type of **autoimmune disorders**.

## Pathophysiology

- Normally, a chemical impulse precipitates the release of acetylcholine from vesicles on the nerve terminal at the myoneural junction. The acetylcholine continuously bind to the receptor sites on the motor end plate, for muscle contraction to sustain.



Myasthenia gravis. (A) Normal ACh receptor site. (B) ACh receptor site in myasthenia gravis.



## Symptoms

### Ocular muscles:

- Ptosis- Drooping of one or both eyelids
- Diplopia- Double or blurred vision

### Face muscles:

- Limited facial expressions (eg. Difficulty smiling)

### Throat muscles:

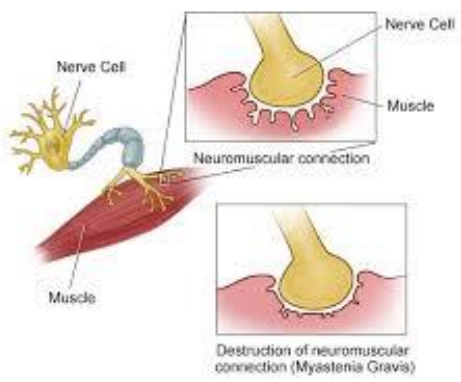
- Dysphagia- Difficult to eat or swallow
- Dysarthria- Slurred speech

### Limb muscles:

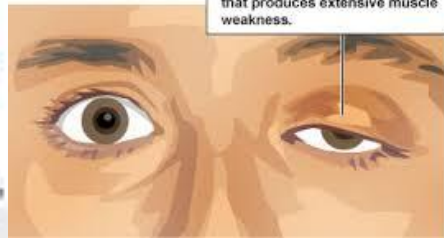
- Weakness in neck, arms, fingers and legs



## Myasthenia Gravis



A drooping eyelid, is the most frequent early sign of myasthenia gravis, a disease that produces extensive muscle weakness.



# ...myasthenia gravis ~ oral cons.

- **Tanda dan gejala Orofacial:**

Sulit membuka mulut lama, sulit menelan → toleransi terhadap perawatan gigi dan mulut kurang

Sulit mengunyah makanan → mempengaruhi diet makanan dan disain prothesa.

Resiko aspirasi >> → diturunkan dengan suction adekuat dan penggunaan rubberdam.

- Pasien MG → **resiko krisis aspirasi** karena penyakit/karena pengobatan (+) → jika perlu sangat/segera tindakan dental → **Rumah Sakit** dengan intubasi endotrakheal.

- Hindari penggunaan obat-obatan yang berpengaruh pada kondisi neuromuscular junction: **Narkotika, tranquilizers, dan barbiturat.**

- Hindari atau hati-hati pada penggunaan antibiotik, berpengaruh pada aktifitas neuromuskular: **tetracycline, streptomycin, sulfonamides, clindamycin.**

Selamat Belajar dan .....

*— Terima kasih — —*