



EPOS2020: the European guidelines for rhinosinusitis and nasal polyps

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The burden and prevention of acute and chronic rhinosinusitis

Prof Claire Hopkins

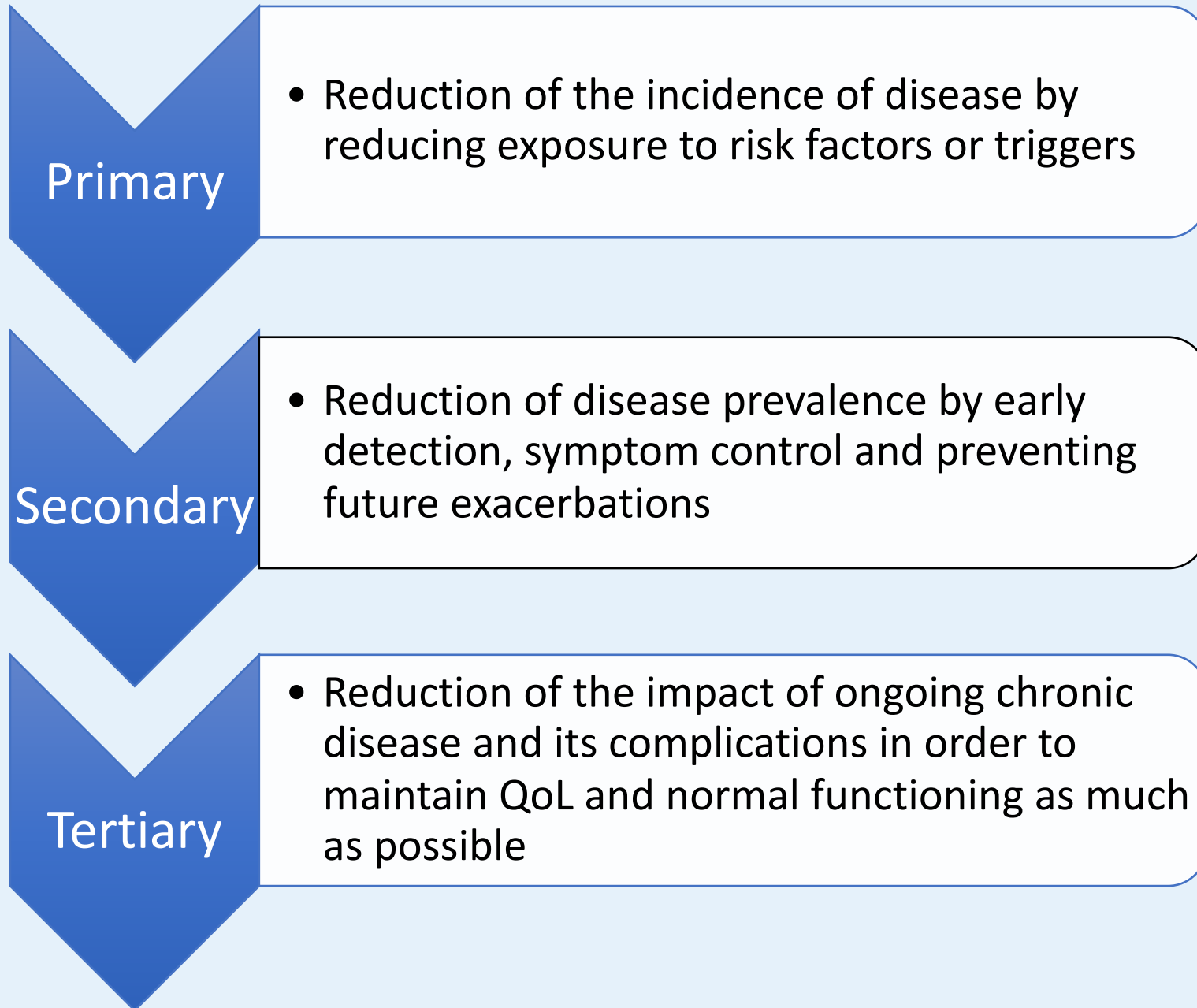
Guy's and St Thomas' Hospitals, London, UK



Can we prevent acute and chronic rhinosinusitis? What is the burden of disease if we can't, and can we minimise that?

Prof Claire Hopkins

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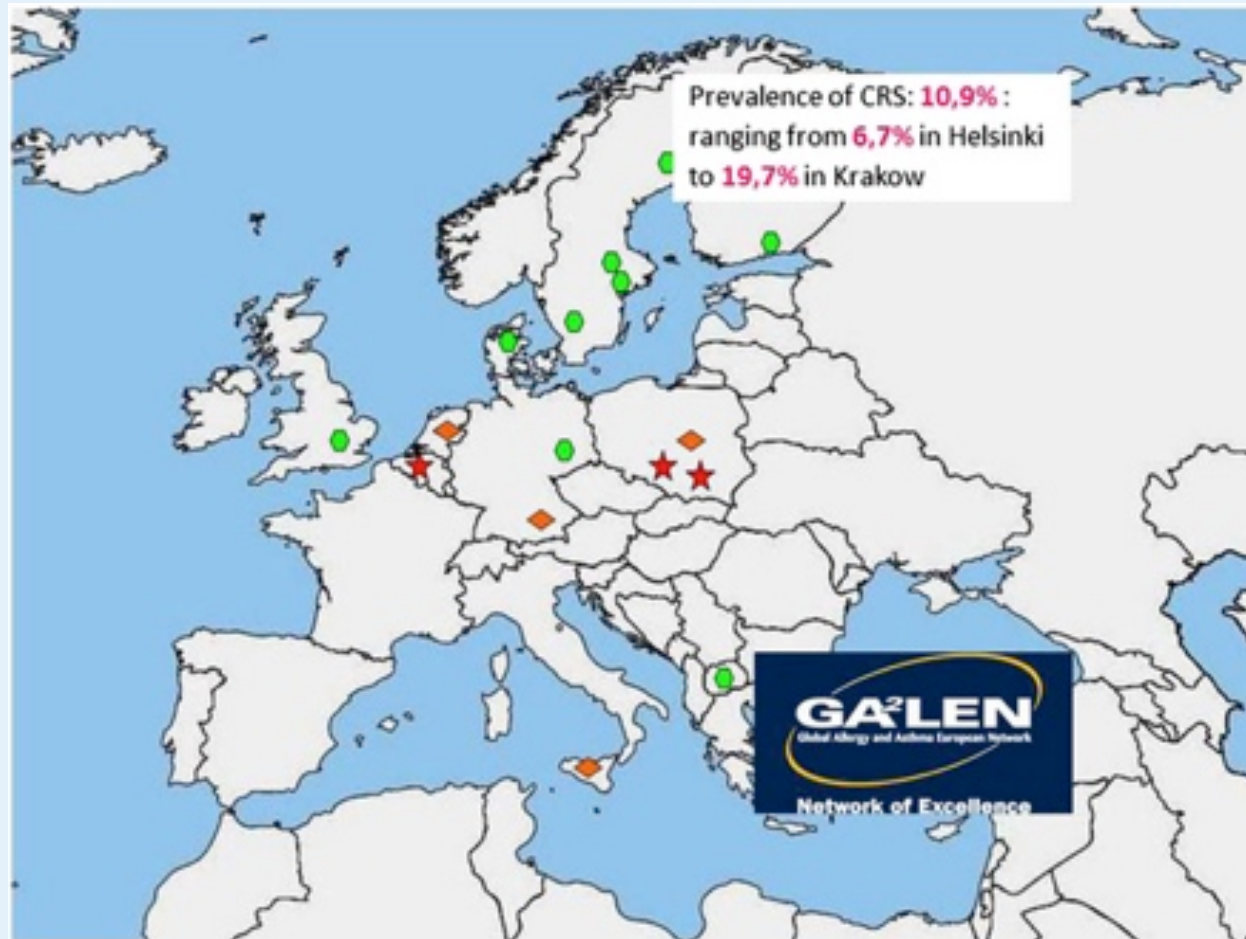
Burden of disease on society

Burden of disease on individual patient

Burden of Acute Rhinosinusitis

- 20 million cases pa in US in 2004 – 1 in 10 / 1 in 20 adults
- Recurrent acute rhinosinusitis – 1 in 3000
- High rate of primary health care visits
- One of the most common triggers for antibiotic prescription (85% of GP consultations)
- Impact on qol for largely overlooked as short duration
- High rates of pain, nasal obstruction, discharge and headache
- >70% difficulties performing normal daily activities, significant absenteeism, resolved within 14 days

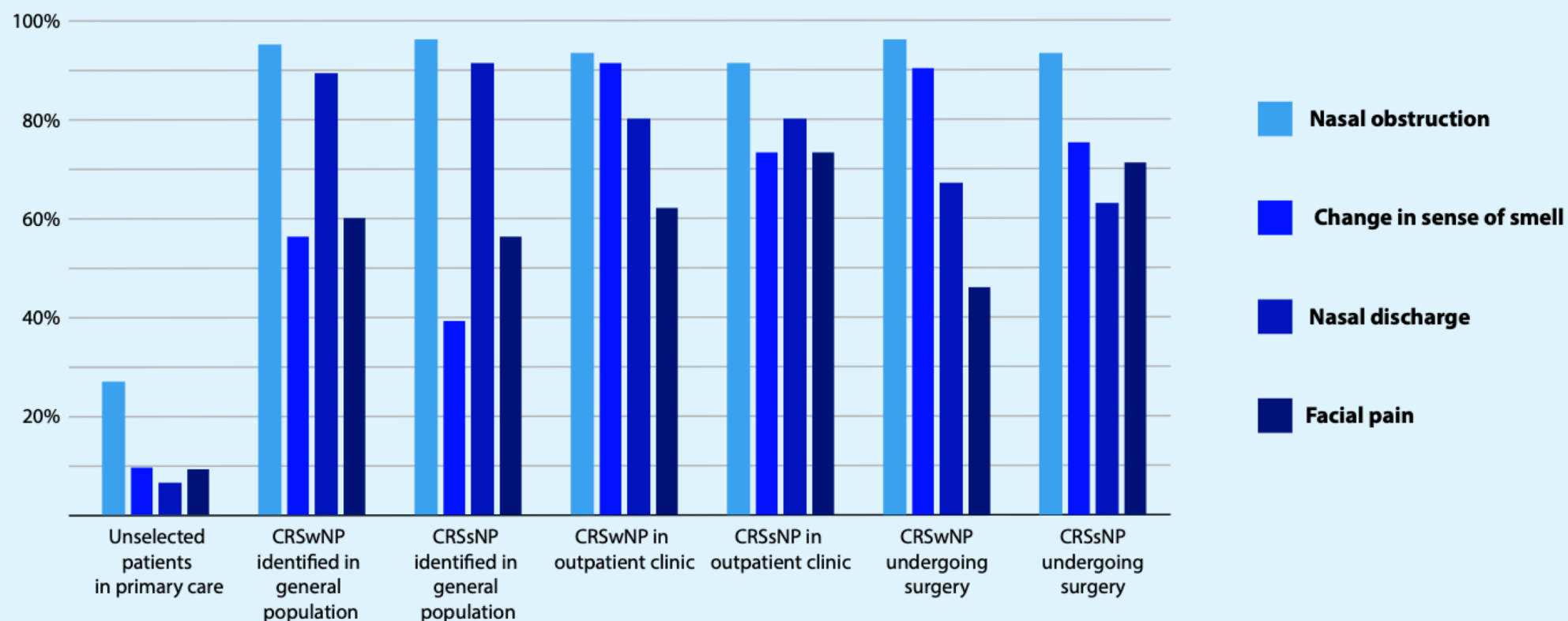
Burden of Chronic Rhinosinusitis - prevalence



Prevalence of symptoms

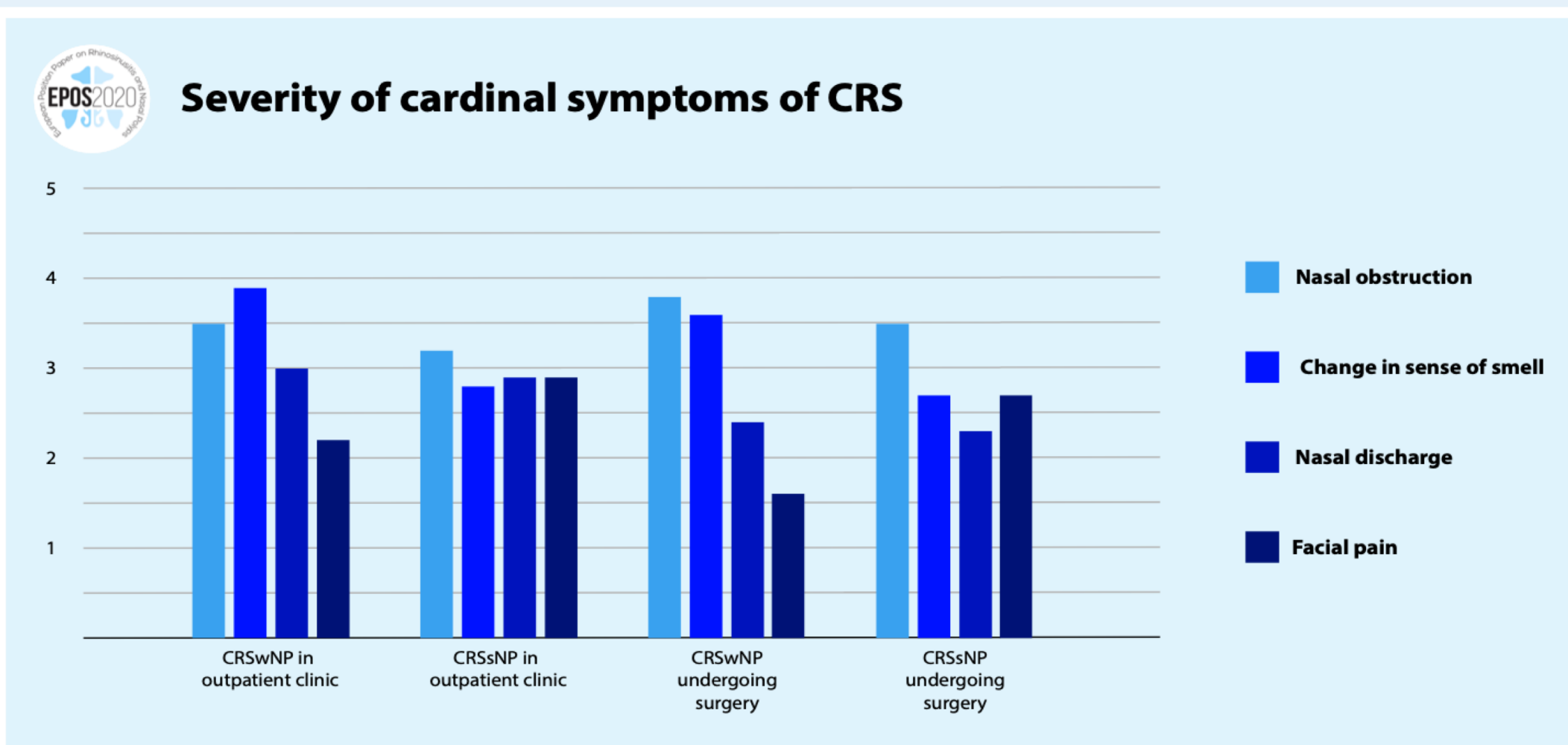


Prevalence of cardinal symptoms of CRS



CRS, chronic rhinosinusitis; CRSsNP, chronic rhinosinusitis without nasal polyps; CRSwNP, chronic rhinosinusitis with nasal polyps.

Severity of symptoms



CRS, chronic rhinosinusitis; CRSsNP, chronic rhinosinusitis without nasal polyps; CRSwNP, chronic rhinosinusitis with nasal polyps.

QOL and financial costs

- Significant impact on QOL
- Greater impact on social functioning than angina, chronic heart failure
- Impact on health utility comparable to patients with asthma
- 11.6 million doctor visits per year in US, \$10 -13 billion expenditure
- £3000 per patient per year
- Indirect financial impact on patient and economy through absenteeism and presenteeism, estimated in excess of \$20 billion

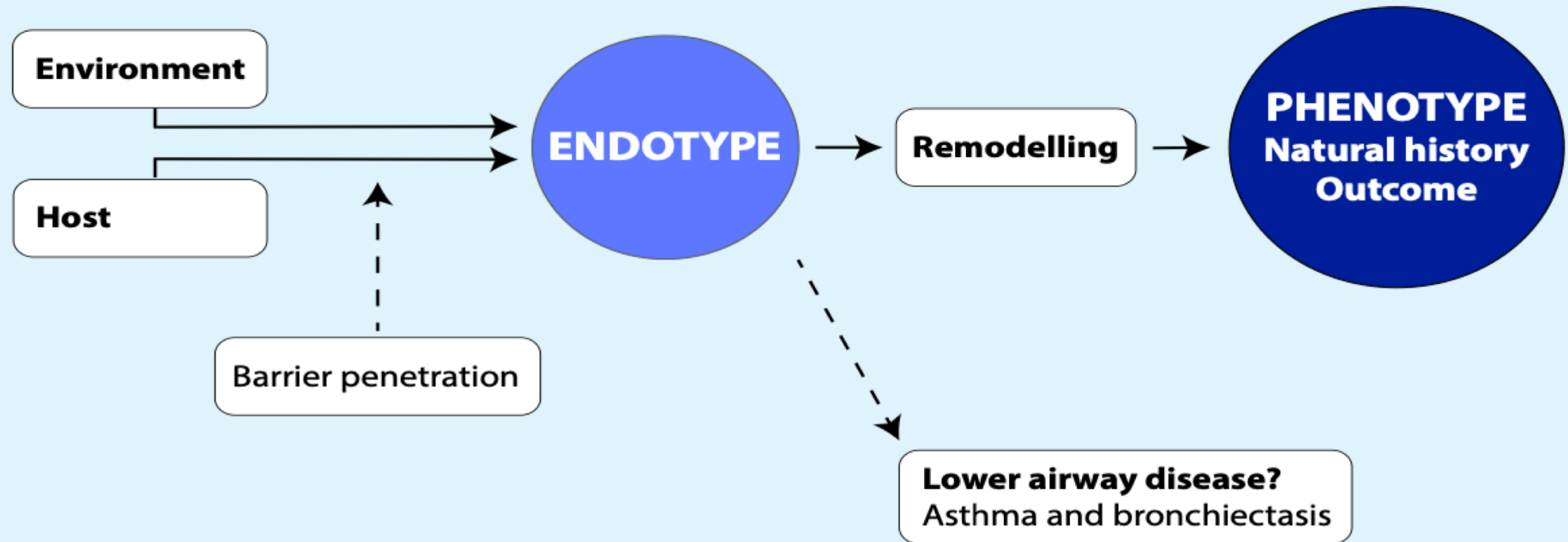
Key principles of precision medicine

- **Prevention of disease**
- Personalized care
- Patient participation
- Prediction of treatment success

Primary

- Reduction of the incidence of disease by reducing exposure to risk factors or triggers

Etiology and Pathogenesis of CRS



Risk factors for developing rhinosinusitis

ARS

- Seasonal variation in viral exposure
- **Smoking**
- **Allergic rhinitis?**
- **Odontogenic infection**
- Anatomical features in RARS?
- Underlying chronic rhinosinusitis

CRS

- Viral exposure
- **Smoking**
- **Allergic rhinitis?**
- **Odontogenic infection**
- Anatomical features?
- Asthma
- NSAID exacerbated respiratory disease
- **Environmental pollutants**
- Immune deficiencies
- Ciliary dysfunction
- **Vit D deficiency**
- **Microbial balance**
- Genetics
- **GORD**

Smoking and CRS

- Strong evidence for smoking as a risk factor
- GALEN study smokers at increased risk (RR1.7) compared with non-smokers
- Dose dependent – 1.5% increase in risk for each additional year of smoking
- Passive smoking in childhood increases risk of adult CRS

Current Tobacco Smoking in Europe

No room for complacency

WHO Region	Male prevalence	Female prevalence	Both sexes
Europe	38%	19%	28%
Western Pacific	48%	3%	26%
Eastern Mediterranean	37%	3%	20%
America	22%	13%	17%
South-East Asia	32%	2%	17%
Africa	25%	2%	13%
Global	36%	7%	21%

Source: WHO report on the global tobacco epidemic, 2015: Raising taxes on tobacco.

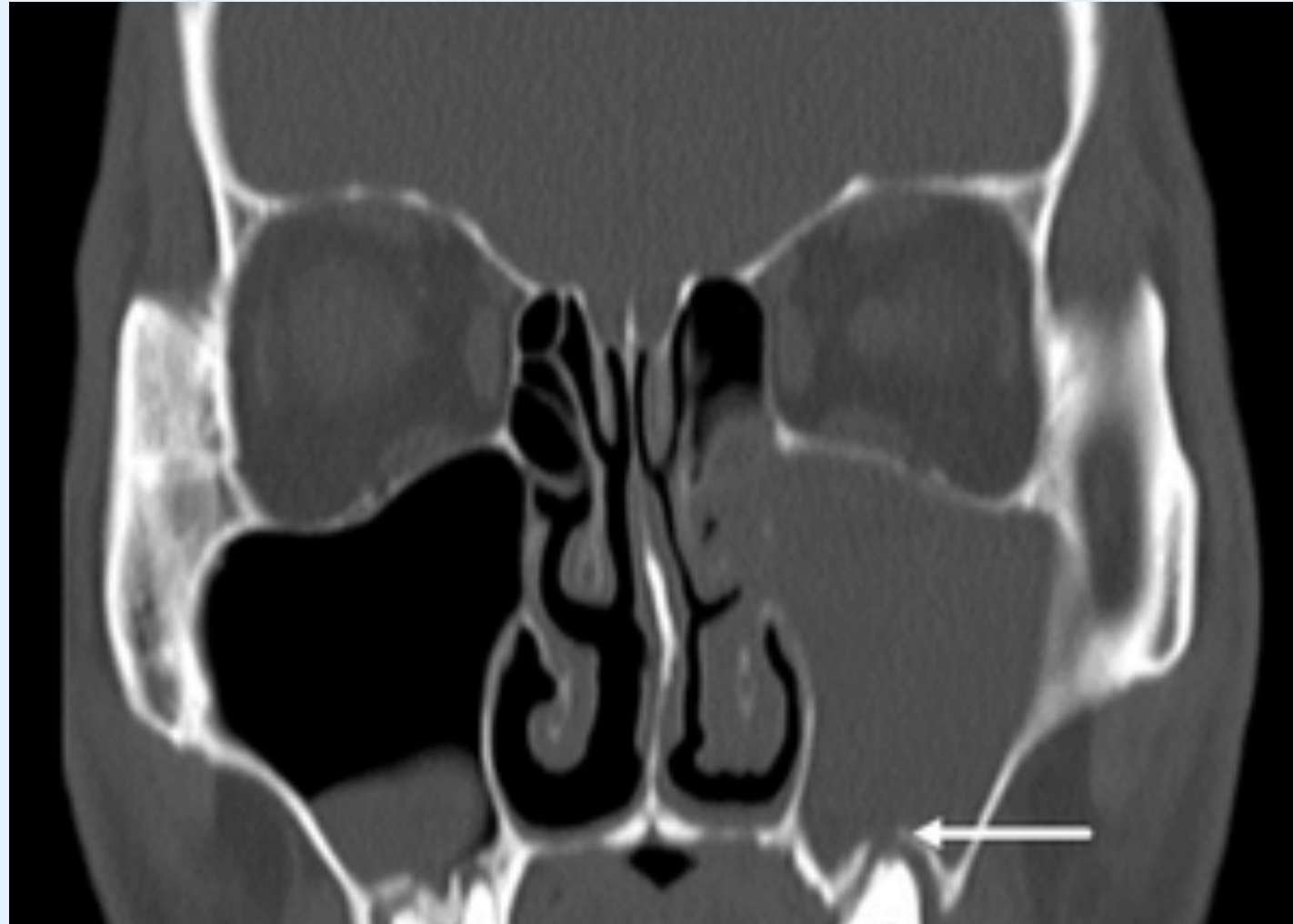
What can we do?

- Smoking advice at every doctor contact
- Smoking cessation services (impact on CRS severity to non-smoking levels in 10 - 20 years)
- Taxation
- Restriction of access to surgery?

Does ARS and CRS occur more commonly in Allergic Rhinitis?

- Literature controversial;
- No convincing evidence that AR is causative (recent SR; 10 studies found association 7 found no association)
- No convincing evidence that AR associated with greater disease severity or treatment failure
- Weak evidence that treatment of AR improves outcomes in CRS
- BUT benefits of effective treatment of AR well established, so optimise management

Odontogenic disease



- Only 52% UK population (adults and children) visited NHS Dentist in last 3 years
- 1 in 3 Americans don't have dental insurance coverage
- Increasing number of visits to Emergency Departments shown in US and Europe related to dental problems
- Increase in odontogenic sinusitis in UK over last 5 years

CLOSED

**DUE TO
COVID-19**

TEMPORARY CLOSURE EXCEPT FOR EMERGENCY DENTAL CARE

It is with sadness we announce the temporary closure of our practice for all but emergency dental care, following the latest advice from the government.

While closing is a hard move to make, we do so knowing that it is the best way to reduce the COVID-19 spread, protecting as many people as possible.

WHAT TO DO IN A DENTAL EMERGENCY

If you are in dental pain, we can help. Please contact us and we will advise you on the best and safest course of action.

Your dental team.

Occupational rhinosinusitis and exposure to toxins

- Paucity of data in CRS
- Growing evidence to support association with wood fumes, dust, gas, and steam
- Occupations shown to have increased risk – farmers, textiles industries, 9/11 first responders
- Recent study links exposure to particulate matter to disease severity and risk of FESS amongst patients with CRS
- Highlights need for global action to reduce pollution and address climate change

Does CRS result from untreated ARS?

- Tan et al; ARS more common in patients developing CRS than healthy controls (OR 3.2) – eHR ? Diagnostic overlap
- Repeated aspirates from patients with ARS show transition in bacterial flora
- No evidence that use of antibiotics in ARS influences risk of CRS
- Risk that antibiotics may be harmful by changing microbiome?

- Microbiome largely established in early years
- Reduced diversity demonstrated in patients with CRS
- Reduced diversity seen after treatment with antibiotics
- May have prolonged effects
- Non-sinusitis related antibiotic exposure shown to assoc with increased risk of developing CRS (OR 2.2 cf non-users)

What can we do

- ARS - Very common, usually self-limiting
- Very limited benefit from antibiotics versus placebo in large number of high-quality trials
- But 85% primary care consultation result in antibiotic prescription
- Support primary care doctors in withholding antibiotics
- Supportive treatment except in presence of complications

Secondary

- Reduction of disease prevalence by early detection, symptom control and preventing future exacerbations

Secondary Prevention – follow EPOS!

- Better diagnostic tools allowing early diagnosis
- Personalized care according to endotype
- Identifying poor disease control
- Timely surgical intervention
- Identifying patients who will fail to benefit from conventional pathways and who will derive greatest benefit from biologics
- Research needed to define role of early intervention as a disease modifier – step up versus step down approaches?

Tertiary

- Reduction of the impact of ongoing chronic disease and its complications in order to maintain QoL and normal functioning as much as possible

- Estimated that 30 - 50% of CRS patients remain uncontrolled despite evidence based care

Tertiary prevention - factors in poorly controlled CRS

POORLY CONTROLLED CRS

Disease-related

- Exogenous factors
- Endogenous factors
- Genetic factors
- Global airway disease

Diagnosis-related

- Incorrect diagnosis
- Failure to identify concomitant local or systemic disease
- Inadequate management of associated disease

Treatment-related

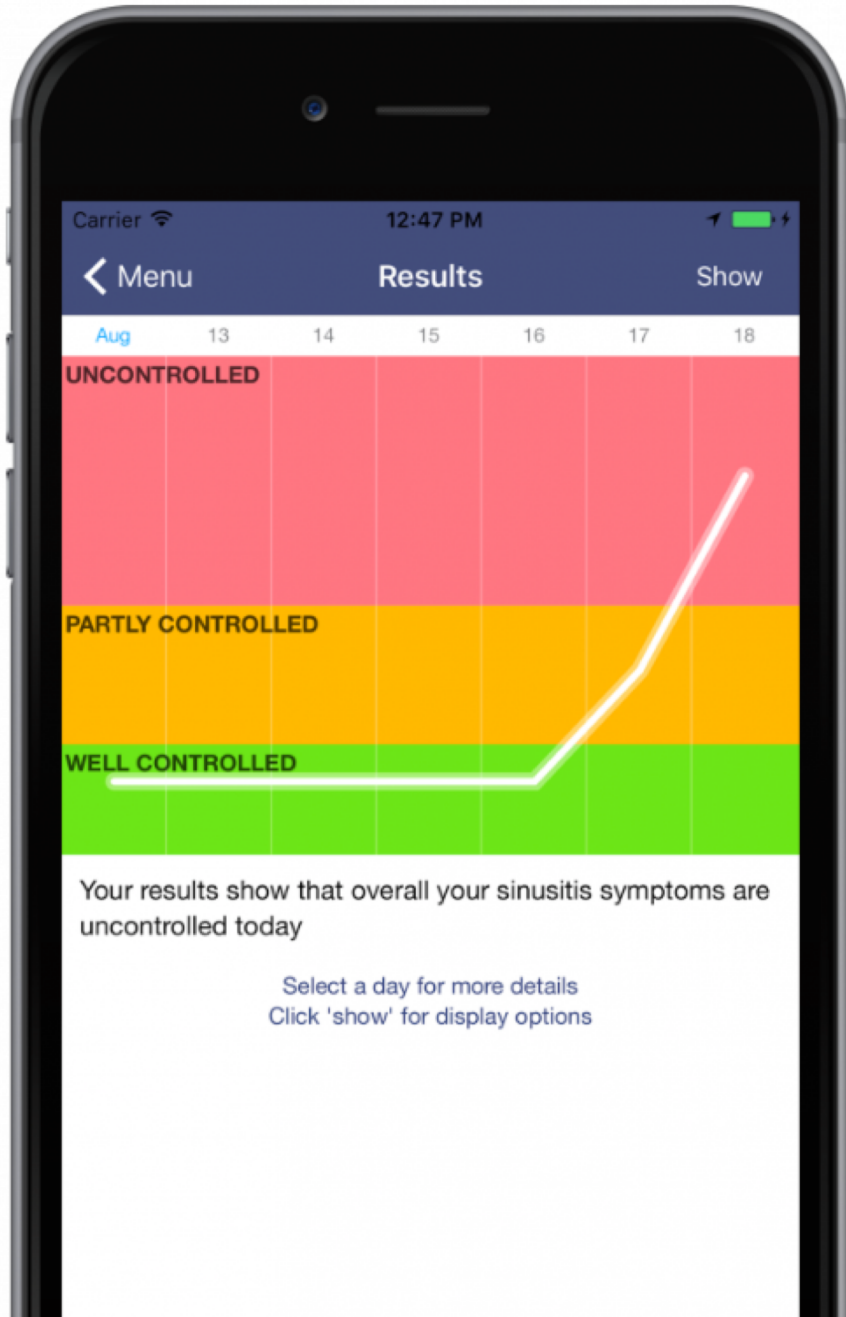
- Inadequate treatment
- Incorrect treatment

Patient-related

- Poor compliance with treatment
- Exposure to environmental irritants

Compliance

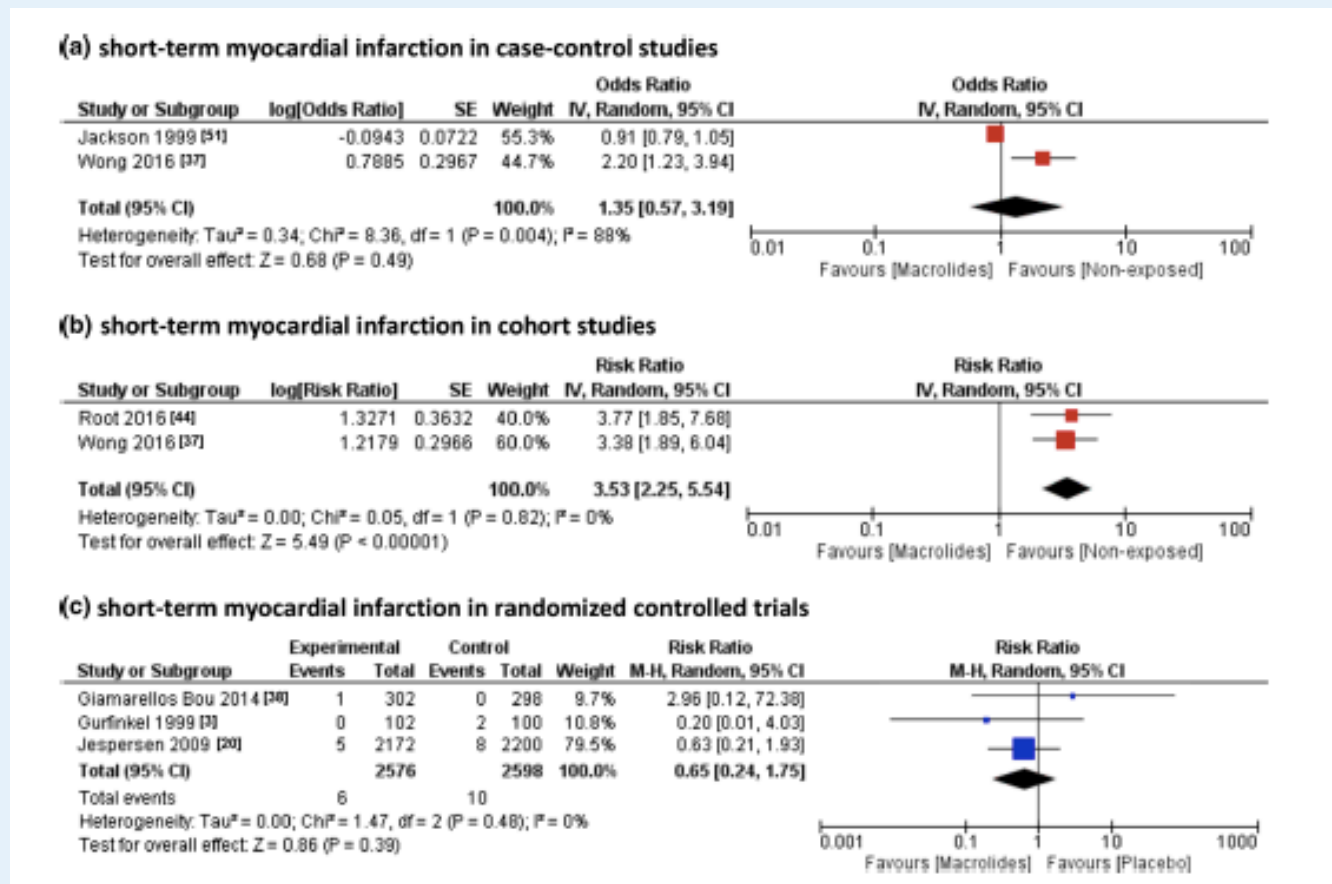
- Only 20% of CRS patients actively using an INCS
- Both poor compliance and under-prescribing likely
- Digital healthcare apps may promote self-management and increase compliance
- Patient contracts
- Slow release drug eluting stents?





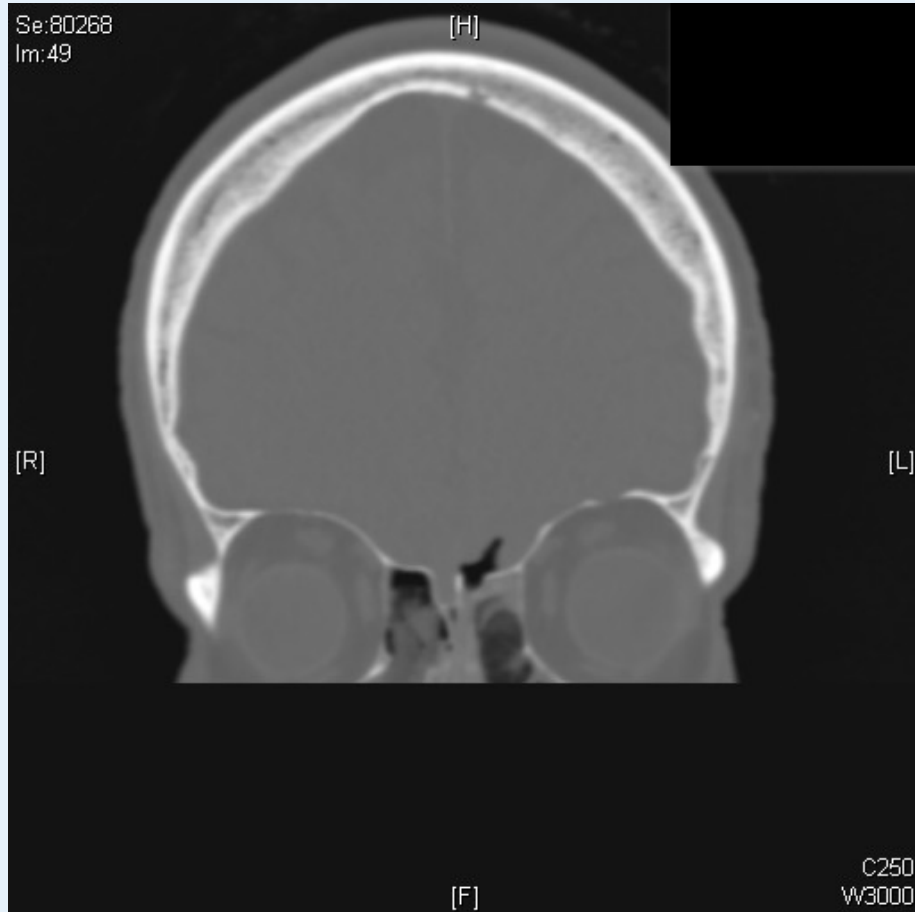
Minimise complications of treatment

- INCS – minimise systemic absorption with modern formulations
- Saline rinse – risk of contamination
- Oral steroids – what is a safe dose?
- Antibiotic resistance ‘one of the greatest health challenges facing the modern world’
- Impact on sinus microbiome unknown



- MACRO study – reviewed 320798 antibiotic prescriptions for CRS received by 66331 patients
- Supports increased short term risk of MI and arrhythmia – approx. 1 in 1000 patients

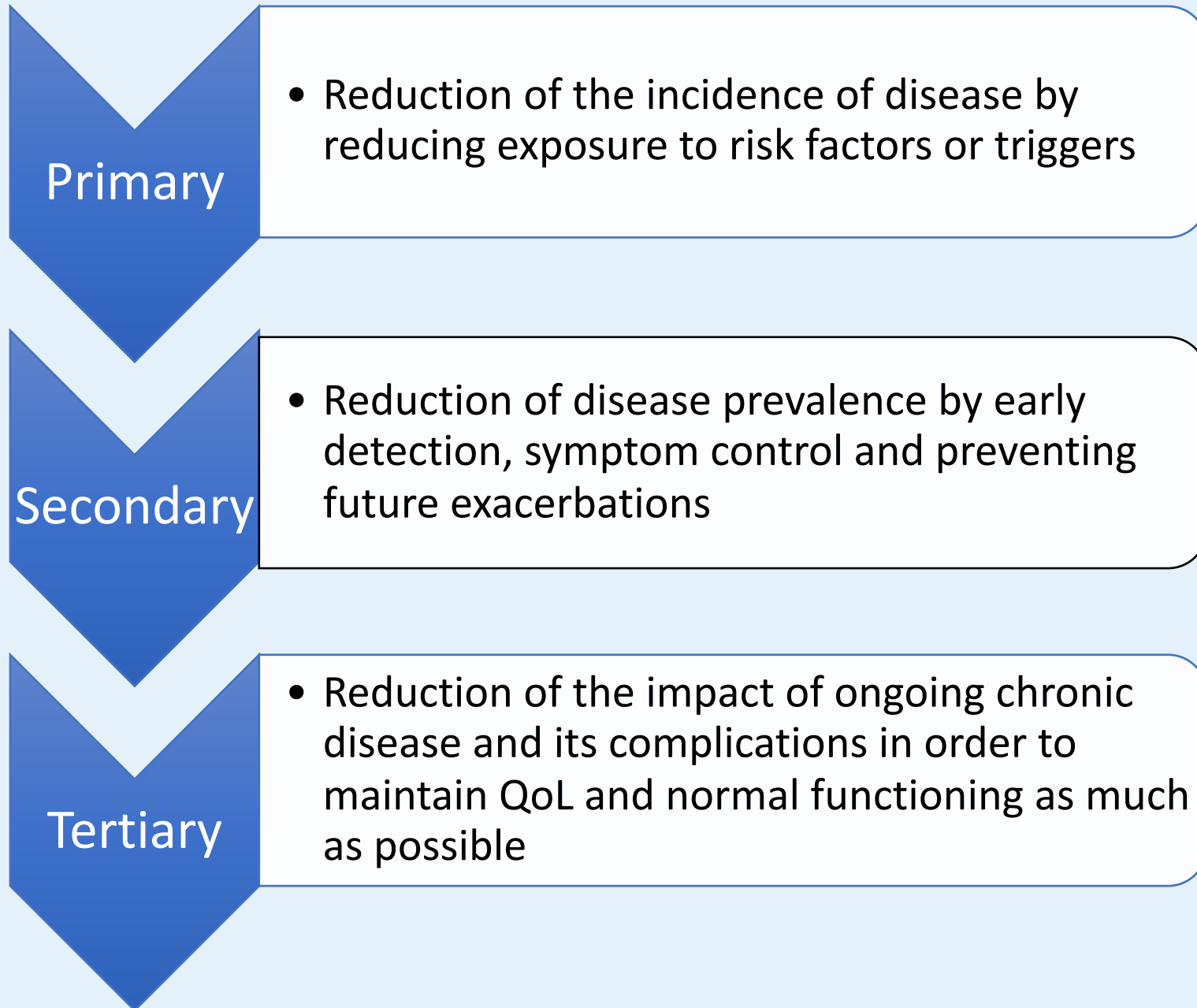
Reducing risk of complications of surgery



- Training
- Advances in instrumentation
- Optimising the surgical field
- Image guidance?
- Augmented reality?

Manage comorbidities

- High levels of depression and anxiety found in CRS patients
- CRS patients with depression report higher symptom scores for same level of disease burden on CT and have higher productivity losses
- After surgery patients with comorbid depression continue to report higher symptom scores



Burden of disease on society

Burden of disease on individual patient

Thank-you

**PREVENTION IS
THE DAUGHTER
OF INTELLIGENCE**

WALTER RALEIGH