

# Malodour: Alleviating Difficult Symptoms

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# Malodour: a pivotal symptom

- A patient with malodour is less likely to be able to go to the hospital, , the homes of friends, a place of worship, the shopping centre, the counsellor's office
- A patient with malodour is less likely to to find pain relief, a support group, unconditional acceptance, a fun outing

# Malodour is a symptom and a stigma within the family and the neighbourhood

- *In 2003, a woman with recurrent cervical cancer would attend the palliative care clinic. Pain was easily controlled, but severe malodour persisted. The patient was distressed that she was causing discomfort to her daughter, son-in-law and young grandchildren, who shared the one-room hut. One evening, when the family who were first had gone to church, the patient hanged herself.*
- *Why?*

# Case 1: Malodour- How does it affect the following domains?

- Pain-Total Pain
- Malodour- Global Suffering
- Physical
- Emotional
- Social
- Spiritual

Smelly fungating wounds can be scary:  
Distressing 'Ds'

# Smelly fungating wounds can be scary: Distressing 'Ds'

- Disfigurement
- Disability
- Defilement
- Disgust
- Depression
- Degradation
- Death

The caregiver who does accompany the patient with malodor is someone heroic. What can we do to help in the situation?

# Management

- Non pharmacologic measures
- Pharmacologic measures



A long journey with malodour...

# A long journey with malodour

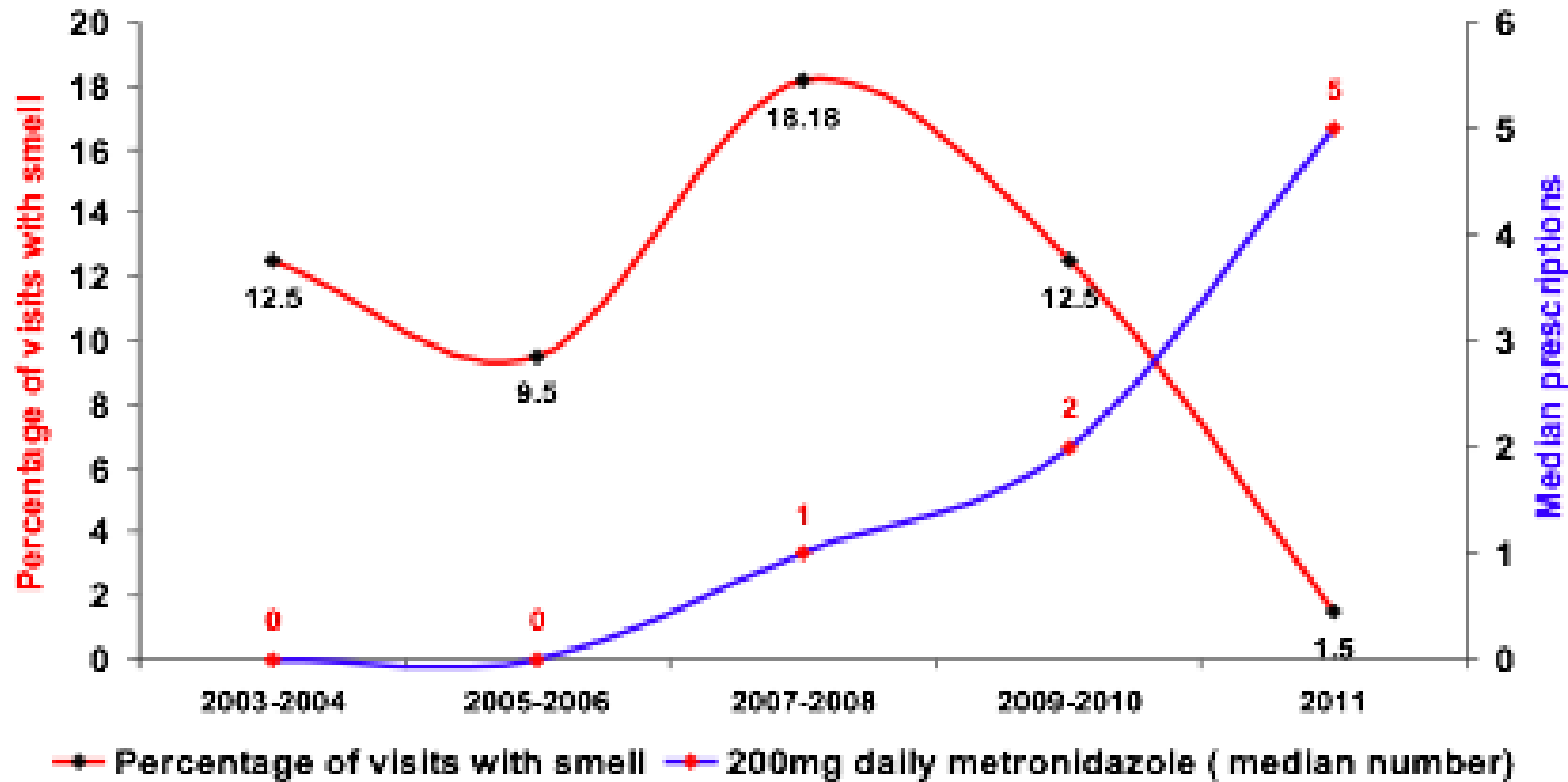
- How to get away it?
- How to bear it ?
- How to prevent it?

The years pass...2013

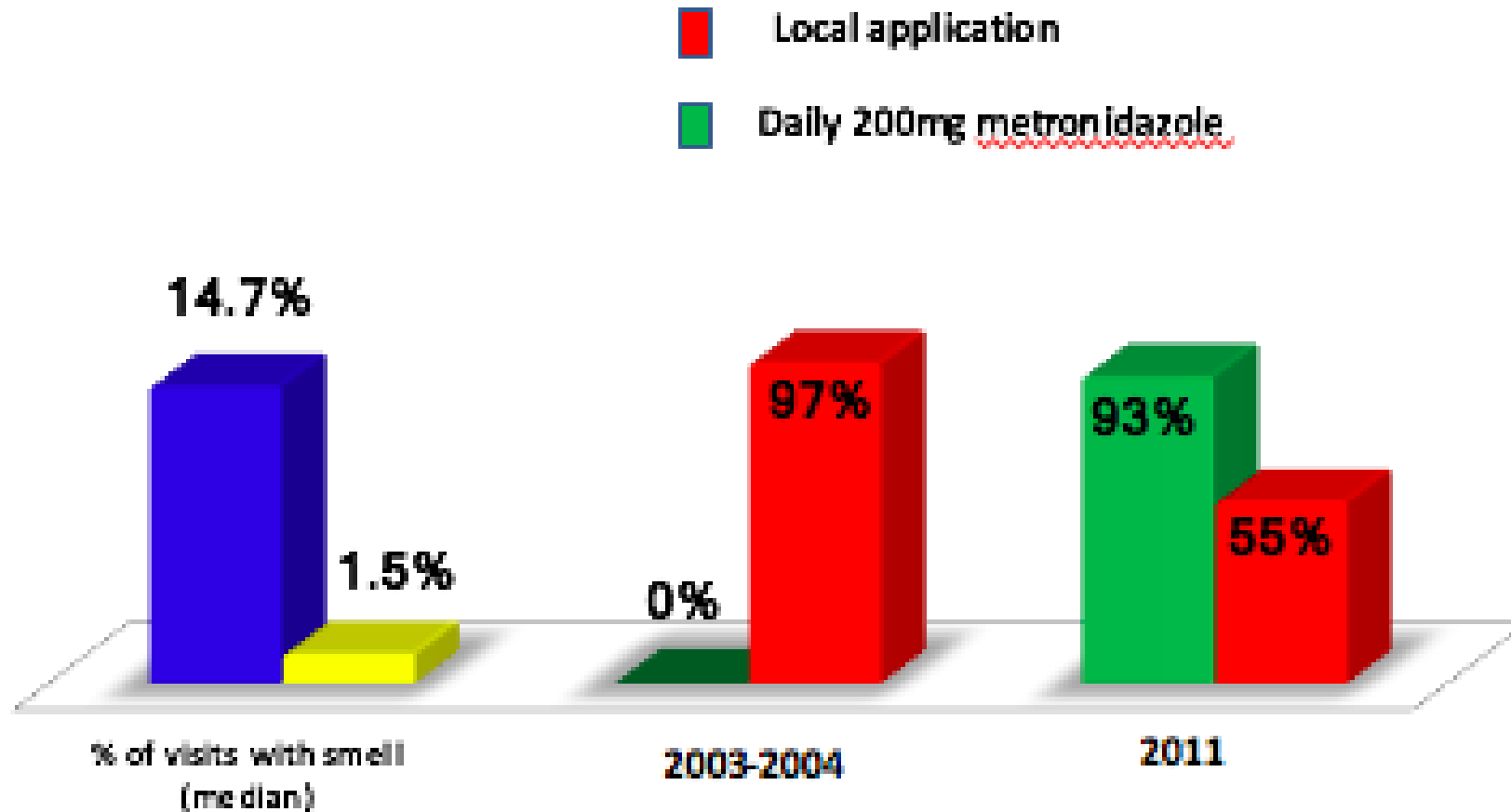
# The first research 'hypothesis'-

- **Doctor's nose** 'Our OPD is not having as many 'smelly days'? Could it be because we are prescribing maintenance metronidazole 200 mg once daily ?
- **Social worker's hands-** I used to buy air fresheners for the clinic every month- I have not bought them for a long time
- **Nurses eyes-** We rarely see maggots now

## Reduction of smell / increasing usage of daily metronidazole



## 2003 -04 vs 2011: A comparison of findings



# Shaky evidence base for metronidazole and malodour

- Largest RCT- fewer than twenty patients
- Most recent RCT- over twenty years ago

Ashford R, Plant G, Maher J, Teare L [Double-blind trial of metronidazole in malodorous ulcerating tumours](#). *Lancet*. 1984; 1(8388):1232-3  
Bower M, Stein R, Evans TR, Hedley A, Pert P, Coombes RC. *A double-blind study of the efficacy of metronidazole gel in the treatment of malodorous fungating tumours*. *Eur J Cancer*. 1992;28:888-9.

# Back to the basics

- What is the chemical cause of smell?
- What are the bacterial causes of smell?
- Can we do anything about the chemical and bacterial causes?



# Gas Chromatography-Mass Spectroscopy- Olfactometer

# Shirasu et al used the GC-MS-O

- Minced pieces of smelly cancers
- Put them into the machine
- As the smell emerged gas chromatography separated them into single gases
- The mass spectroscope identified the chemical identity of each
- As these segregated and named gases, come out one by one, the human being sniffed and describe the smell
- The machine measured the quantity of each smelly gas
- *Shirasu M, Nagai S, Hayashi R, et al. Dimethyl trisulfide as a characteristic odor associated with fungating cancer wounds. Biosci Biotechnol Biochem. 2009; 73:2117-20*

# The books say

- The smell is caused by organic fatty acids
- A few organic fatty acids came out of the machine but they were not smelly enough!!

# Organic fatty acids coming of the GC MS O

- Sour smell- acetic acid- ( vinegar)
- ‘Cheese and vomit’ smell - butyric acid (butter)
- ‘Cheese and foot smell’ - isovaleric acid
- Shirasu et al found that most smelly culprit was ..

*Shirasu M, Nagai S, Hayashi R, et al. Dimethyl trisulfide as a characteristic odor associated with fungating cancer wounds. Biosci Biotechnol Biochem. 2009; 73:2117-20*

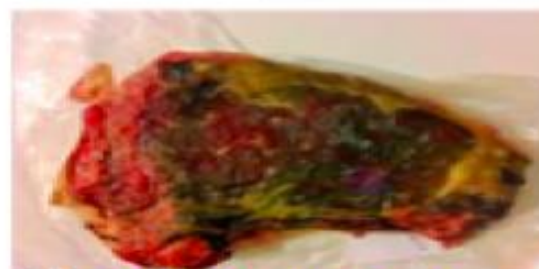
# Dimethyl Tri-sulfide: Smell of rotting tissues

The main culprit

**Di-methyl trisulphide**



Found in faeces and in :



**Rotten meat**



**Boiled rotten  
cabbage**

# Dimethyl trisulfide : A blessing or a curse?

- In a dead carcass the internal anaerobes begin necrosis- produce DMTS
- DMTS attracts the flies that lay eggs which hatch into larvae
- Larvae eat the flesh from dead bodies
- And transform them to clean bones
- A very essential part of **nature's waste recycling** strategy
  - *Statheropoulos M, Agapiou A, Spiliopoulou C, et al. Environmental aspects of VOCs evolved in the early stages of human decomposition. Sci Total Environ. 2007;385:221-7.*

The anaerobes that produce this  
are not villains or external  
pathogens

Many are friendly commensals that live within us-mouth, gut, vagina etc.

DMTS is to the fly what strong coffee, baking bread or an aromatic curry is to human beings

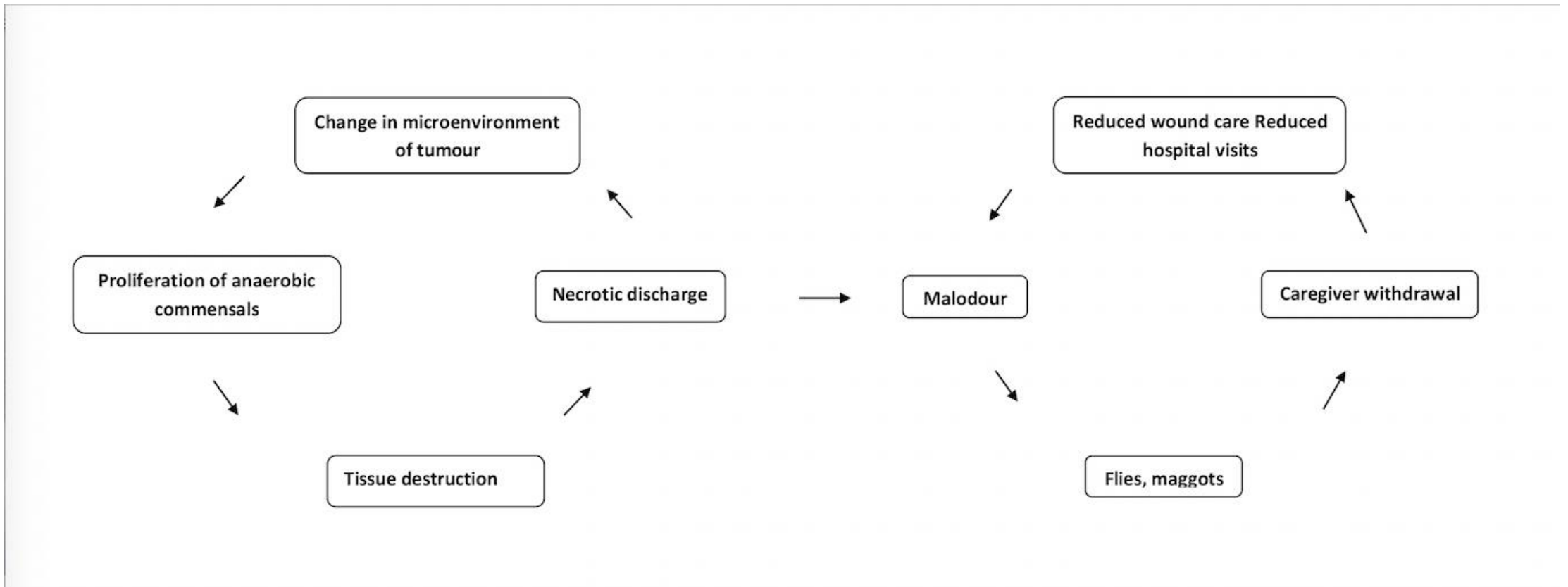
The problem is when the DMTS is coming not from a dead carcass but from a suffering human being

*Johnson SD, Jürgens A. Convergent evolution of carrion and faecal scent mimicry in fly-pollinated angiosperm flowers and a stinkhorn fungus. South African Journal of Botany. 2010;76:796-807*



Maggots in the dead tissues of live patients- patients may be turned out of their homes

Second hypothesis: an **internal vicious cycle** leads to an **external vicious cycle**-Metronidazole applies the **brake on the bicycle**



# Not evidence based treatment

- The last RCT was over 20 years ago
- The largest RCT had 12 patients
- Number needed to benefit is important
- **What about the number harmed by not treating such a pivotal symptom ?**

- Ashford R, Plant G, Maher J. et al. [Double-blind trial of metronidazole in malodorous ulcerating tumours](#). *Lancet*. 1984; 1(8388):1232-3
- Bower M, Stein R, Evans TR et al. A double-blind study of the efficacy of metronidazole gel in the treatment of malodorous fungating tumours. *Eur J Cancer*. 1992;28:888-9.

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*BMJ Support Palliat Care*. 2017 Sep;7(3):286-291. doi: 10.1136/bmjspcare-2016-001166. Epub 2017 Feb 6.

## Improving malodour management in advanced cancer: a 10-year retrospective study of topical, oral and maintenance metronidazole.

[George R<sup>1</sup>](#), [Prasoon TS<sup>1</sup>](#), [Kandasamy R<sup>1</sup>](#), [Cherian R<sup>1</sup>](#), [Celine T<sup>1</sup>](#), [Jeba J<sup>1</sup>](#), [Murali S<sup>1</sup>](#), [Mathew D<sup>2</sup>](#).

### + Author information

#### Abstract

**OBJECTIVES:** To explore the relative effectiveness of topical or oral metronidazole used for malodour in necrotic cancers and to propose a protocol for metronidazole usage in managing malodour.

**METHODS:** A retrospective case note review of the management of malodour over 10 years comparing outcomes with topical, intermittent and maintenance oral metronidazole.

**RESULTS:** Among 179 patients treated for malodour, the commonest primaries were cervical (45%), and head and neck cancers (40%). Outcomes were poor during the period when only topical or intermittent oral metronidazole was used. Topical use gradually decreased (97% vs 55%) and the proportion of patients receiving maintenance oral metronidazole increased (0% in 2003-2004 vs 93% in 2011). Concurrently, there was reduction in documented malodour (12.5% of visits per patient in 2003-2004 vs 1.5% in 2011,  $p < 0.01$ ).

**CONCLUSIONS:** Our data support formulary guidelines recommending maintenance metronidazole for recurrent malodour. Dimethyl trisulfide, a product of anaerobic necrosis causes malodour and can attract maggot-producing flies to decaying tissues. Therefore, to reduce anaerobic malodour in vulnerable settings, we propose a ladder for metronidazole titration. High-risk patients should start with 400 mg thrice daily  $\times 7$  days and continue 200 mg once daily. The SNIFFF severity (Smell-Nil, Faint, Foul or Forbidding) can guide follow-up dosage: 200 mg once daily to continue for nil or faint smell; breakthrough courses of 400 mg thrice daily  $\times 1$  week for foul smell and 2 weeks for forbidding smell, followed by 200 mg once daily. The effectiveness and limitations of maintenance metronidazole and the SNIFFF ladder should be prospectively evaluated.

For the prescriber's pen- A  
malodour ladder and mnemonic

# Systemic measures: A **SNIFFF ladder** for malodour until we have better evidence

## **SNIFFF' Ladder : Smell- Nil, Faint, Foul, or Forbidding? Titrating Metronidazole for malodour**

Patients at high risk of recurrent malodour / inadequate wound care  
Give a course of oral metronidazole - 400mg thrice daily for seven days.  
Consider maintaining on 200 mg once daily.

Teach low cost, home based wound care and environmental hygiene  
On follow up, rate severity of smell to titrate metronidazole dosage

### **Negligible or faint smell**

Continue metronidazole  
200 mg o.d. as maintenance

**Foul smell** (definite unpleasant smell)

Add 400 mg t.d.s metronidazole for seven days then continue 200 mg o.d.

**Forbidding smell** (unbearable smell/smell makes it difficult to provide care)

Add 400 mg t.d.s for two weeks and maintain on 200 mg twice daily

George et al. 2017. Twycross et al 2014

# Non-Pharmacologic Measures in Resource Limited Settings

# Patient 2...

- *In 2002, a man was found face down, abandoned near the oncology department with maggots crawling out of his neck. He had hypopharyngeal cancer and had previously come regularly for radiotherapy accompanied by a relative. When bad smell increased, the family began to withdraw. Flies laid eggs on the open fungating neck node, maggots developed and the patient was turned out of the house. He was admitted, and the maggots were removed. The family was unwilling to take the patient back*



- Why did the family abandon him?
- Why did they take care of him earlier
- What single step would have prevented the precipitating problem?
- What steps did we need to take to facilitate that single step?

- Why did the family abandon him? *Maggots, fear, revulsion*
- Why did they take care of him earlier? *They wanted him to get better*
- What single step would have prevented the precipitating problem? *Barriers to prevent flies sitting on the malodorous ulcer*
- What steps did we need to take to facilitate that single step? *Make it simple*

# Problems in covering head and neck wounds

- Uneven
- Discharge/ fistula- plaster peels off
- Gaps
- Bandaging not as easy as on a limb
- Interferes with feeding, breathing, seeing

# To facilitate regular dressings for smelly lesions

- Keep the smell down
- Keep it simple
- Keep it inexpensive
- Encourage and support the relative

A second barrier to the maggot producing fly: :  
A mosquito net or a scarf



# Reducing the cost of nursing supplies

- Old cotton leggings – roller bandages- can be sterilized in a steamer
- Clean cotton dhotis/sarees- dressing pads, draw sheets
- Old cotton T shirts- rolled into sanitary pads
- Old cotton scarves, dupattas:- scarves to cover a head and neck ulcer
- For very heavy oozes:- baby diapers or sanitary pads covered by a dressing

# Summary

- Malodour is a pivotal symptom
- It has a domino effect on psycho-spiritual and physical care
- SNIFFF and prevent malodour with maintenance metronidazole
- Prevent maggots by covering the wound AND reducing malodour

# Researching Neglected Problems in Resource Limited Settings

- If there is a difficult problem for your patient
- If literature shows few effective solutions
- If very little new research is going on...
- That is an important problem to explore- audit/thesis/ conference poster
- Start with an open minded survey and careful, brief proforma
- Cross sectional- who, what, how many, how severe
- Follow up- how long, what happens, what helps, what does not help?
- Analytical- Are their clues in literature from other fields?
- Reflective-What is this patient teaching me about this problem?



# References

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