

Hello!

As grown ups, we are so engrossed with work, and multitude of things that need our attention that, I thought it is not possible to feel the child like glee, that is characteristic of Diwali days, but I was wrong. Diwali days are special; and the feeling of happiness does creep in.



I can imagine the same feeling in your mind too. So let's leave behind all the hassles and have a nice Diwali together!
To get back to newsletter, this time let us discuss - A) Malaria B) Olfactory detection of cancer C) Baseline albumin and resuscitation D) Controlling dengue with curtains.

Great review on malaria diagnosis...

It was **all viral fever** for last couple of months...but now **malaria has started to appear** again, last week found number of cases (all adults), of falciparum, vivax; and one mixed also. All were primarily smear positive; one was rapid malaria test positive and then found to be smear



positive. I guess with careful microscopy and rapid malaria test, we should be able pick up most (?all) of the cases. Anyway they were not with very high parasitemia. But pathologists need to be careful now. *As time is right, let us check out this paper form 'Clinical Microbiology Reviews'. (Page 2)*

Time to keep dogs in our clinics?

I would have never imagined this, **people have studied whether dogs can be trained to sniff bladder cancers in patient's urine** and they found that, yes,



dogs were able to sniff the **CANCER** more often than merely by chance. Beware diagnostics companies; new tumour marker (SNIFFER?) is on the way! *(Page 3)*

In ICU patients, does baseline serum albumin affect outcome if we resuscitate with either a) 4% albumin, or b) saline? This saline versus albumin fluid evaluation (SAFE)



study found that "The outcomes of resuscitation with albumin and saline are *similar irrespective* of patients' baseline serum albumin concentration." Check out the details on *page 4*.

Paraddei mei rahane do... (Read in Hindi!)

We thought last year belonged to **dengue** and now we are done with it; but no, it is back. All the news channels seem flooded with the news about dengue. So let us check out this ingenious solution -



This study from BMJ found - Use of window curtains treated with insecticide alone or in combination with treated jar covers can substantially reduce the **dengue** vector population and potentially reduce disease transmission *(Page 5)*

Have you noticed the days are getting smaller; it is nearly dark at 6.30 in the evening. Though we may be too busy to notice it; occasional quiet evening does show that the season is changing.



So let us prepare ourselves for some cool months. With that it's me saying, Bye!
Regards,



~Sachin

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<http://sachinkale1.tripod.com>

(1, Cont.)

Rapid Diagnostic Tests for Malaria Parasites

(Check out complete article at – <http://snipurl.com/malar>)



Anthony Moody presents a diagnostic challenge to laboratories in most countries.

- Endemic **malaria**, population movements, and travelers all contribute to presenting the laboratory with **diagnostic problems** for which it may have little expertise available.
- **Drug resistance and genetic variation** has *altered many accepted morphological appearances* of **malaria** species, and new technology has given an opportunity to review available procedures.
- Concurrently the World Health Organization has **opened a dialogue** with scientists, clinicians, and manufacturers on the realistic possibilities for developing accurate, sensitive, and cost-effective rapid diagnostic tests for **malaria**, capable of detecting 100 parasites/μl from all species and with a semiquantitative measurement for monitoring successful drug treatment.
- New technology has to be **compared with an accepted gold standard** that makes comparisons of sensitivity and specificity between different methods.
- The majority of **malaria** is found in countries where cost-effectiveness is an important factor and ease of performance and training is a major consideration.
- Most new technology for **malaria** diagnosis incorporates immunochromatographic capture procedures, with conjugated monoclonal antibodies providing the indicator of infection.
- Preferred targeted antigens are those which are abundant in all asexual and sexual stages of the parasite and are currently centered on detection of HRP-2 from *Plasmodium falciparum* and parasite-specific lactate dehydrogenase or *Plasmodium* aldolase from the parasite glycolytic pathway found in all species.
- Clinical studies allow effective comparisons between different formats, and the reality of nonmicroscopic diagnoses of **malaria** is considered.

Comparison of methods for diagnosing *Plasmodium* infection in blood (If you see carefully, microscopy emerges as clear winner, regarding sensitivity, cost and time of result; only caveats being good smears, careful staining and painstaking microscopy.)

Parameter	Microscopy	PCR	Fluorescence	Dipstick HRP-2	Dipstick pLDH, ICT <i>Pf/Pv</i>
Sensitivity parasites/μl	50	5	50	>100	>100
Specificity	All species	All species	<i>P. falciparum</i> good, others difficult	<i>P. falciparum</i> only	<i>P. falciparum</i> and <i>P. vivax</i> good, and <i>P. ovale</i> and <i>P. malariae</i> only with pLDH
Parasite density or parasitemia	Yes	No	No	Crude estimation	Crude estimation
Time for result	30–60 min	24 h	30–60 min	20 min	20 min
Skill level	High	High	Moderate	Low	Low
Equipment	Microscope	PCR apparatus	QBC apparatus or direct fluorescence microscope	Kit only	Kit only
Cost/test	Low	High	Moderate/low	Moderate	Moderate

(2, Cont.)

Olfactory detection of human bladder cancer by dogs: proof of principle study

Objective To determine **whether dogs can be trained** to identify people with **bladder cancer** on the basis of **urine odour** more **successfully** than would be expected by chance alone.

Design Experimental, "proof of principle" study in which six dogs were trained to discriminate between urine from patients with bladder cancer and urine from diseased and healthy controls and then evaluated in tests requiring the selection of one bladder cancer urine sample from six controls.

Participants 36 male and female patients (age range 48-90 years) presenting with new or recurrent transitional cell carcinoma of the bladder (27 samples used for training; 9 used for formal testing); 108 male and female controls (diseased and healthy, age range 18-85 years—54 samples used in training; 54 used for testing).

Main outcome measure Mean proportion of successes per dog achieved during evaluation, compared with an expected value of 1 in 7 (14%).

Results Taken as a group, the dogs correctly selected urine from patients with bladder cancer on 22 out of 54 occasions. This gave a **mean success rate of 41%** (95% confidence intervals 23% to 58% under assumptions of normality, 26% to 52% using bootstrap methods), **compared with 14% expected** by chance alone. Multivariate analysis suggested that the dogs' capacity to recognise a characteristic bladder cancer odour was independent of other chemical aspects of the urine detectable by urinalysis.

Conclusions **Dogs can be trained** to distinguish patients with bladder cancer on the basis of urine odour more successfully than would be expected by chance alone. **This suggests that tumour related volatile compounds are present in urine, imparting a characteristic odour signature** distinct from those associated with secondary effects of the tumour, such as bleeding, inflammation, and infection.



Some interesting resources on the net

<http://www.yorku.ca/scottm/writ2300/SciMed.ppt> (I found this presentation, valuable in understanding how a literature search should be carried out.)

<http://videocast.nih.gov/ram/wlc010505.ram> ('Help! I Have to Give a Presentation!' A video cast on nuts and bolts of public speaking)

http://snipurl.com/sci_paper (How to Write and Publish Papers in Medical Journals. For the serious, & casual researcher, video as well as transcript in pdf format available)

(3, Cont.)

Effect of baseline serum albumin concentration on outcome of resuscitation with albumin or saline in patients in intensive care units: analysis of data from the saline versus albumin fluid evaluation (SAFE) study



- **Objective:** To determine *whether outcomes of resuscitation with albumin or saline in the intensive care unit depend on patients' baseline serum albumin concentration.*
- **Setting** Intensive care units of 16 hospitals in Australia and New Zealand.
- **Participants** 6045 participants in the saline versus albumin fluid evaluation (SAFE) study.
- **Interventions** Fluid resuscitation with 4% albumin or saline in patients with a baseline serum albumin concentration of 25 g/l or less or more than 25 g/l.
- **Main outcome measures** Primary outcome was all cause **mortality at 28 days**. Secondary outcomes were **length of stay** in the intensive care unit, length of stay in hospital, **duration of renal replacement therapy, and duration of mechanical ventilation.**
- **Main results** The odds ratios for death for albumin compared with saline for patients with a baseline serum albumin concentration of 25 g/l or less and more than 25 g/l were 0.87 and 1.09, respectively (ratio of odds ratios 0.80, 95% confidence interval 0.63 to 1.02); P = 0.08 for heterogeneity. No significant interaction was found between baseline serum albumin concentration as a continuous variable and the effect of albumin and saline on mortality. No consistent interaction was found between baseline serum albumin concentration and treatment effects on length of stay in the intensive care unit, length of hospital stay, duration of renal replacement therapy, or duration of mechanical ventilation.
- **Conclusion:** *The outcomes of resuscitation with albumin and saline are similar irrespective of patients' baseline serum albumin concentration.*

Some PJs for diwali..

MUNNA BHAI : Circuit, bole toh yeh Ford kya hai?

CIRCUIT : Bhai, gaadi hai.

MUNNA BHAI : Toh phir, yeh Oxford kya hai?

CIRCUIT : Bole toh, simple hai bhai, Ox mane Bael, Ford mane gaadi. Oxford bole toh Baelgaadi.

CIRCUIT : Oye Short Circuit yeh light bulb pe baap ka naam kya likh raha hai?

SHORT CIRCUIT : Apun baap ka naam roshan kar rehle hai.



(4, Cont.)



Effective control of dengue vectors with curtains and water container covers treated with insecticide in Mexico and Venezuela: cluster randomised trials

- **Objective was** to measure the impact on the **dengue** vector population (*Aedes aegypti*) and disease transmission of window curtains and water container covers treated with insecticide.
- **Setting** 18 urban sectors in Veracruz (Mexico) and 18 in Trujillo (Venezuela).
- **Participants** 4743 inhabitants (1095 houses) in Veracruz and 5306 inhabitants (1122 houses) in Trujillo.
- **Intervention** Sectors were paired according to entomological indices, and one sector in each pair was randomly allocated to receive treatment.
- In Veracruz, the **intervention comprised curtains treated with lambda-cyhalothrin and water treatment with pyriproxyfen chips** (an insect growth regulator).
- In Trujillo, **the intervention comprised curtains treated with longlasting deltamethrin (PermaNet) plus water jar covers** of the same material.
- Follow-up surveys were conducted at intervals, with the final survey after 12 months in Veracruz and nine months in Trujillo.
- **Main outcome measures** *Reduction in entomological indices*, specifically the Breteau and house indices.
- **Results** In both study sites, indices **at the end of the trial were significantly lower than those at baseline**, though with no significant differences between control and intervention arms.
- The mean **Breteau index dropped** from 60% (intervention clusters) and 113% (control) to 7% (intervention) and 12% (control) in Veracruz and from 38% to 11% (intervention) and from 34% to 17% (control) in Trujillo.
- The **pupae per person and container indices** showed similar patterns.
- In contrast, in nearby communities not in the trial the entomological indices followed the rainfall pattern.
- The intervention reduced mosquito populations in neighbouring control clusters (spill-over effect); and houses closer to treated houses were less likely to have infestations than those further away.
- This created a community effect whereby mosquito numbers were reduced throughout the study site.
- The observed effects were probably associated with the use of materials treated with insecticide at both sites because in Veracruz, people did not accept and use the pyriproxyfen chips.

Conclusion: *Window curtains and domestic water container covers treated with insecticide can reduce densities of dengue vectors to low levels and potentially affect dengue transmission.*

Parting Thought...



"Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider."

~ Sir Francis Bacon

(End, 5)