



Inspiring Trust, Assuring Safe & Nutritious Food
Ministry of Health and Family Welfare, Government of India

Anti Microbial Resistance : FSSAI perspective

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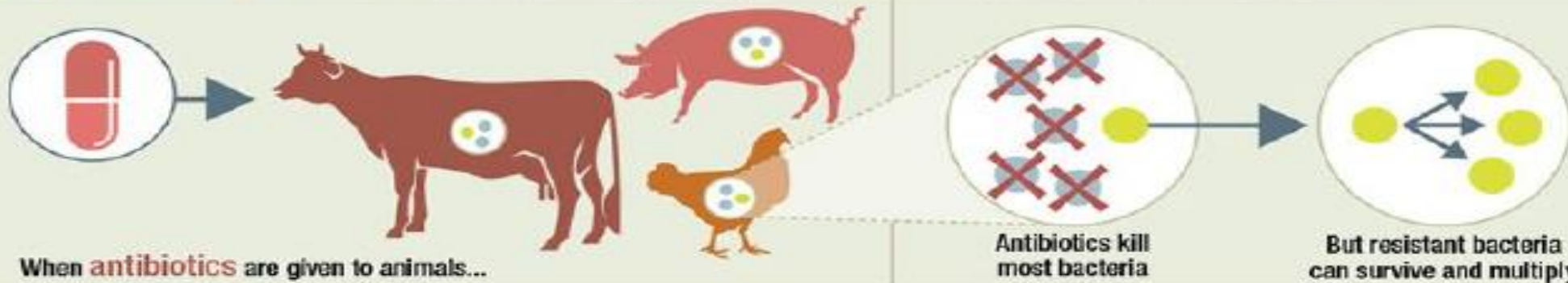
“One Health”

- Recognition of clear linkage of human, livestock, companion animal and wildlife health
- Added value of health and wellbeing of humans and animals and/or financial savings from closer cooperation of human and animal health.
- Shift from sectoral to integrated systems – “One Health” approach

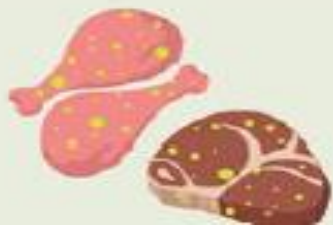
ANTIBIOTIC RESISTANCE

from the farm to the table

RESISTANCE Animals can carry harmful **bacteria** in their intestines



SPREAD Resistant bacteria can spread to...



Antibiotic and Food

- Antibiotics used in food producing animals for:
 - ✓ Prevention and control of diseases
 - ✓ Treatment of diseases
 - ✓ Growth promotion of animals

Uncontrolled presence of residues of antibiotics and other drugs in food, as a result of their use in food producing animals, has the potential to pose a threat to human health and also lead to the development of antimicrobial resistance (AMR)

Regulation

- Food Safety and Standards (Contaminants, Toxins and Residues) Amendment Regulations, 2018- Effective from 1 Jan 2019
- New/revised tolerance limits for 43 antibiotics/veterinary drugs in meat/meat products (including poultry and fish) and milk.
- 19 antibiotics/veterinary drugs prohibited for use
- Tolerance limits for 10 antibiotics in honey already existing
- Guidance note on prudent use on anti microbial

Major Issues

- Extra label use
- Withdrawal period
- Antibiotic residue in honey and bakery
- Risk assessment in Indian context
- High use of antibiotics in Chicken and fish.

Categorisation of Antimicrobials by WHO

		Antimicrobial class	Criterion (Yes=●)					
			C1	C2	P1	P2	P3	
Medically Important Antimicrobials	Critically Important	CRITICALLY IMPORTANT ANTIMICROBIALS						
		<i>HIGHEST PRIORITY</i>						
		Highest Priority	Cephalosporins (3 rd , 4 th and 5 th generation)	●	●	●	●	●
			Glycopeptides	●	●	●	●	●
			Macrolides and ketolides	●	●	●	●	●
			Polymyxins	●	●	●	●	●
			Quinolones	●	●	●	●	●
		<i>HIGH PRIORITY</i>						
			Aminoglycosides	●	●		●	●
			Ansamycins	●	●	●	●	
			Carbapenems and other penems	●	●	●	●	
			Glycylcyclines	●	●	●		
			Lipopeptides	●	●	●		
			Monobactams	●	●	●		
			Oxazolidinones	●	●	●		
		Penicillins (natural, aminopenicillins, and antipseudomonal)	●	●		●	●	
		Phosphonic acid derivatives	●	●	●	●		
		Drugs used solely to treat tuberculosis or other mycobacterial diseases	●	●	●	●		
		HIGHLY IMPORTANT ANTIMICROBIALS						
	Highly Important		Amidinopenicillins		●	NA		
		Amphenicols		●				
		Cephalosporins (1 st and 2 nd generation) and cephamycins		●				
		Lincosamides		●				
		Penicillins (anti-staphylococcal)		●				
		Pseudomonic acids		●				
		Riminoferazines	●					
		Steroid antibacterials		●				
		Streptogramins		●				
		Sulfonamides, dihydrofolate reductase inhibitors and combinations		●				
		Sulfones	●					
		Tetracyclines	●					
Important	IMPORTANT ANTIMICROBIALS							
		Aminocyclitols			NA			
		Cyclic polypeptides						
		Nitrofurantoin						
		Nitroimidazoles						
		Pleuromutilins						

Criterion 1 & 2

- ✓ The antimicrobial class is the sole, or one of limited available therapies, to treat serious bacterial infections in people
- ✓ The antimicrobial class is used to treat infections in people caused by either:
 - (1) bacteria that may be transmitted to humans from nonhuman sources, or
 - (2) bacteria that may acquire resistance genes from nonhuman sources

Prioritization criterion 1 & 2

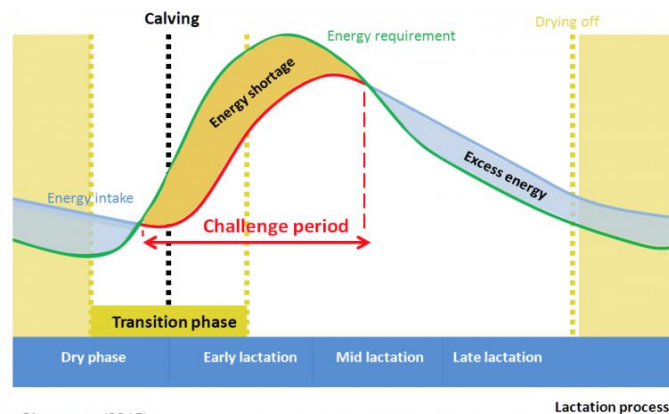
- ✓ High absolute number of people, or high proportion of use in patients with serious infections in health care settings affected by bacterial diseases for which the antimicrobial class is the sole or one of few alternatives to treat serious infections in humans.
- ✓ High frequency of use of the antimicrobial class for any indication in human medicine

Issues at Farmer level

Genetics Upgradation is the main focus

Nutrition is not in focus in large animal .

Results in maximum incidence of disease around calving because of negative energy balance..



1957

1978

2005



56 d

905 g

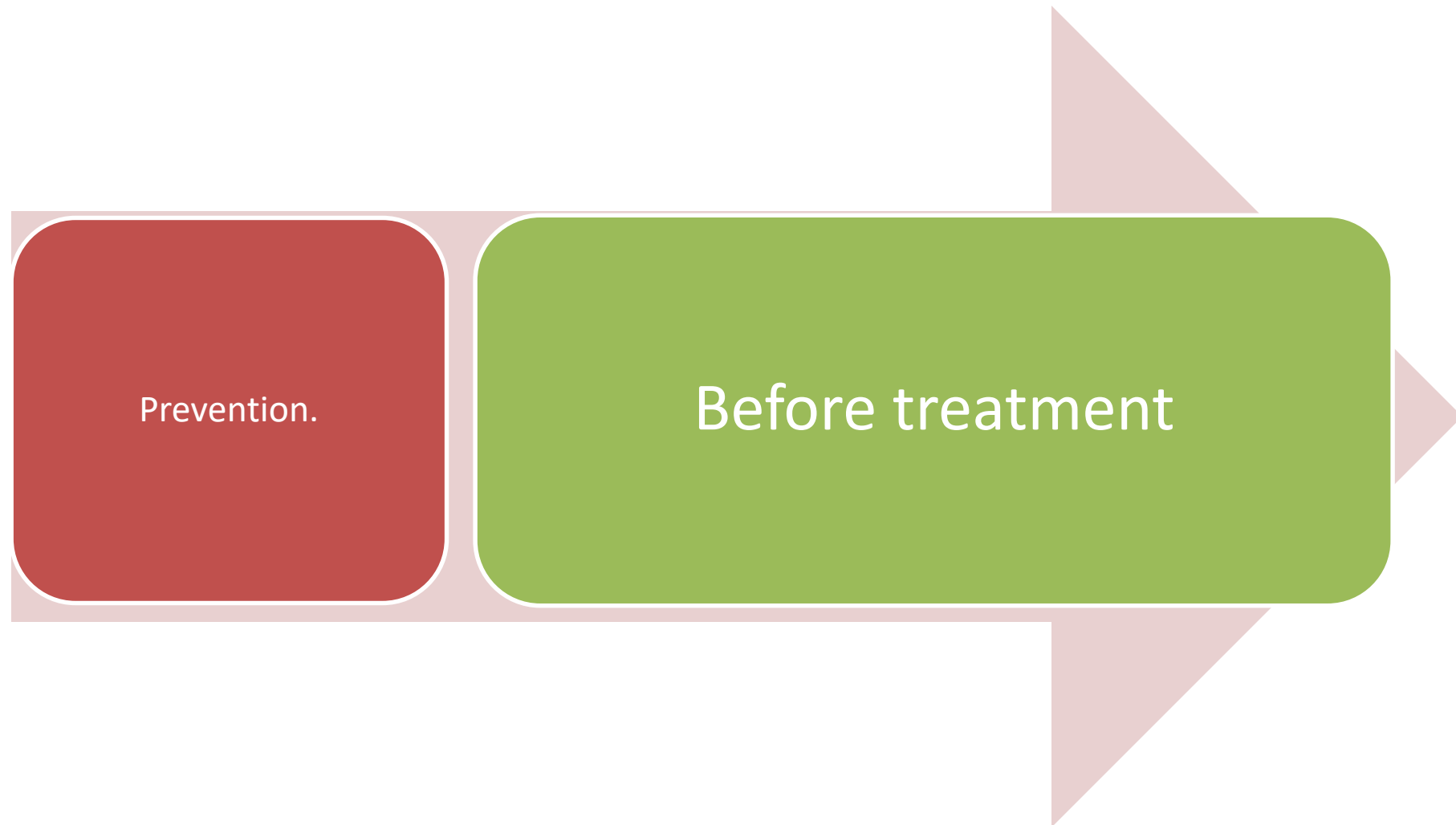
1,808 g

4,202 g

GM Animals: Then and Now

- Modern Broiler grows to a weight of 2-2.5 Kg in 35 days as compared with the 12 weeks they took to reach this weight 30 years ago
- Milk yield for Swedish dairy cows over time: increased from 4,200 kg to 9,000 kg between 1957 and 2003. (from Oltenacu and Algers 2005).
- India milk production from 17 million tonnes to 165.4 million tonnes (870 % ↑)
- With per capita availability of 355gm/day.

What is needed



Roadmap

Integration of activities of NCDC , FSSAI, Environment and State Food Authorities in the field of food safety

Prescription audits of the Veterinary drugs and classification of critical antimicrobials

Collection of data from health sector, analyzing the data and converting the data into relevant information to be utilized by the decision makers

Integration of Food Laboratories notified under FSS Act 2006 with Veterinary labs.

Banning of antibiotics of highest priority in humans

Action Plan

S.No.	Action to be Taken
1.	Categorisation <ul style="list-style-type: none">• Complete restriction of antibiotics critically important for human medicine (As per WHO list)• 3 categories: Human use, Veterinary use and dual (human and veterinary) use
2.	Surveillance <ul style="list-style-type: none">• All India co-ordinated project on monitoring of antibiotic residue in food of animal origin.• Focus on critically important antibiotics• Proposed 1200 samples per year
3.	Alternatives to Antibiotics Use <ul style="list-style-type: none">• Vaccination of animals• Ayurveda/Herbal medicine use• Codes of Practice

Conclusion

Veterinary prescription audits after categorization of antibiotics.

Data generation , regulation & awareness program passionately

One health approach



भारत का राजपत्र The Gazette of India

असाधारण
EXTRAORDINARY
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स्वास्थ्य और परिवार कल्याण मंत्रालय

(स्वास्थ्य और परिवार कल्याण विभाग)

अधिसूचना

नई दिल्ली, 19 जुलाई, 2019

का.आ. 2807(अ)—जबकि, यह केन्द्रीय सरकार की जानकारी में लाया गया है कि पशुओं, खाद्य उत्पादक पशुओं, कुक्कुट, जल कृषि और पशुचारा अनुपूरक आहार में कोलिस्टिन और इसकी विनिर्मितियों का उपयोग मनुष्य के लिए हानिकारक है;

और जबकि, ओपधि तकनीकी सलाहकार बोर्ड ने उक्त मामले पर विचार किया है और खाद्य उत्पादक पशुओं, कुक्कुट, जल कृषि और पशुचारा अनुपूरक आहार के लिए उक्त ओपधि और इसकी विनिर्मितियों को निषिद्ध करने की सिफारिश की है;

और जबकि, केन्द्रीय सरकार का समाधान है कि खाद्य उत्पादक पशुओं, कुक्कुट, जल कृषि और पशुचारा अनुपूरक आहार के लिए उक्त ओपधि और इसकी विनिर्मितियों के विनिर्माण, बिक्रय और वितरण को लोकहित में निषिद्ध करना आवश्यक और समीचीन है;

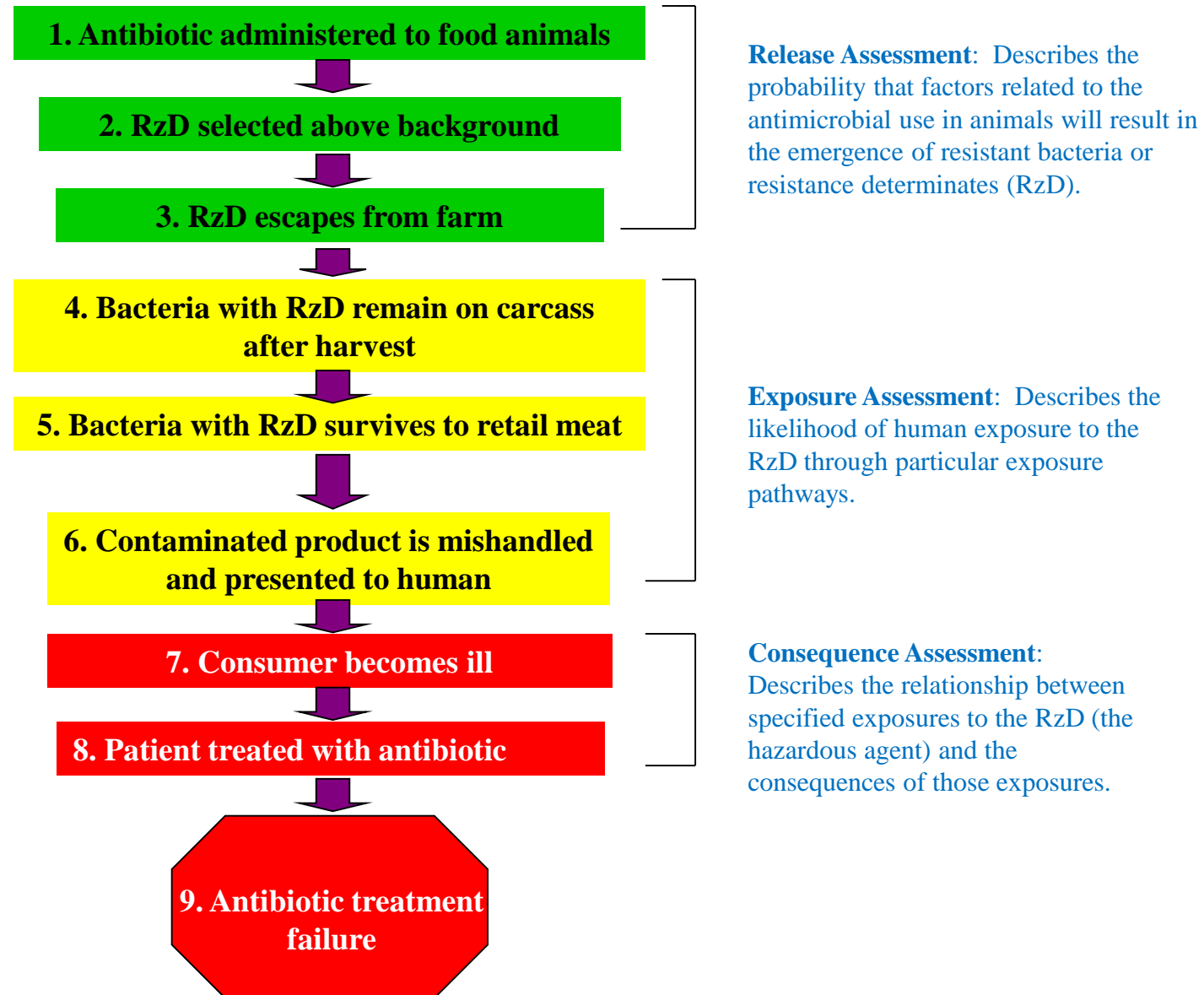
अतः अब, ओपधि और प्रसाधन सामग्री अधिनियम, 1940 (1940 का 23) की धारा 26क द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, केन्द्रीय सरकार एतद्वारा—

- (क) निम्नलिखित ओपधि के विनिर्माण, बिक्रय और वितरण को तत्काल प्रभाव से निषिद्ध करती है, अर्थात्—
“खाद्य उत्पादक पशुओं, कुक्कुट, जल कृषि और पशुचारा अनुपूरक आहार के लिए कोलिस्टिन और इसकी विनिर्मितियों” और
- (ख) निदेश देती है कि कोलिस्टिन और इसकी विनिर्मितियों के विनिर्माण इस ओपधि के आधान पर लेबल लगाएंगे और उक्त ओपधि और इसकी विनिर्मितियों के पैकेज के निर्दिष्ट में और प्रोत्साहनपरक साहित्य में स्पष्ट रीति से “खाद्य उत्पादक पशुओं, कुक्कुट, जल-कृषि और पशुचारा अनुपूरक आहार में उपयोग के लिए नहीं” शब्दों का उल्लेख करेंगे।

[फा. सं. एक्स.11014/8/2019-डीआर]

डॉ. मनदीप के. भण्डारी, संयुक्त सचिव

Pathway of events leading to the risk of foodborne human illness with resistant organism due to antibiotic treatment of food animals



RzD: Resistance determinant

Ionophore Risk

The use of ionophores in food animals does not create a risk to human health because none of the risk criteria are met.

- ✘** An antibiotic must select for foodborne bacteria that acquire antibiotic-resistance...*Release*
- ✘** A person must ingest meat from a treated animal that is contaminated...*Exposure*
- ✘** The person that ingests these bacteria must become sick with a bacterial infection...*Consequence*

Orthosomycin Risk

The use of orthosomycins in food animals does not create a risk to human health because the third risk criteria is not met.

- ✓ An antibiotic must select for foodborne bacteria that acquire antibiotic-resistance...*Release*
- ✓ A person must ingest meat from a treated animal that is contaminated...*Exposure*
- ✗ The person that ingests these bacteria must become sick with a bacterial infection...*Consequence*

No Risk vs. Low Risk: Macrolides

The use of macrolides in food animals could potentially compromise human health risk; all of the risk criteria are met

- ✓ An antibiotic must select for foodborne bacteria that acquire antibiotic-resistance...*Release*
- ✓ A person must ingest meat from a treated animal that is contaminated...*Exposure*
- ✓ The person that ingests these bacteria must become sick with a bacterial infection...*Consequence*

Veterinary Medicine

- I am a vet .I have been bitten by a cat. I have been bitten by a rat. I have been kicked by a cow. I have once fell face-down on dungs. I have once been infested by cattle ticks. I have once touched a lion (Sedated).I have once touched Hyena (sedated). I have played with snakes (young and non- venomous) severally. Sometimes I like what I do. Sometimes I love it. Sometimes I am indifferent. But most times I believe I will change the world someday.

Social media connect



Twitter @drvpsinghvet



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Thank You

