Measles and Varicella in Solid Organ Transplantation

Christophe Masset

Conflicts of interest : none

Measles

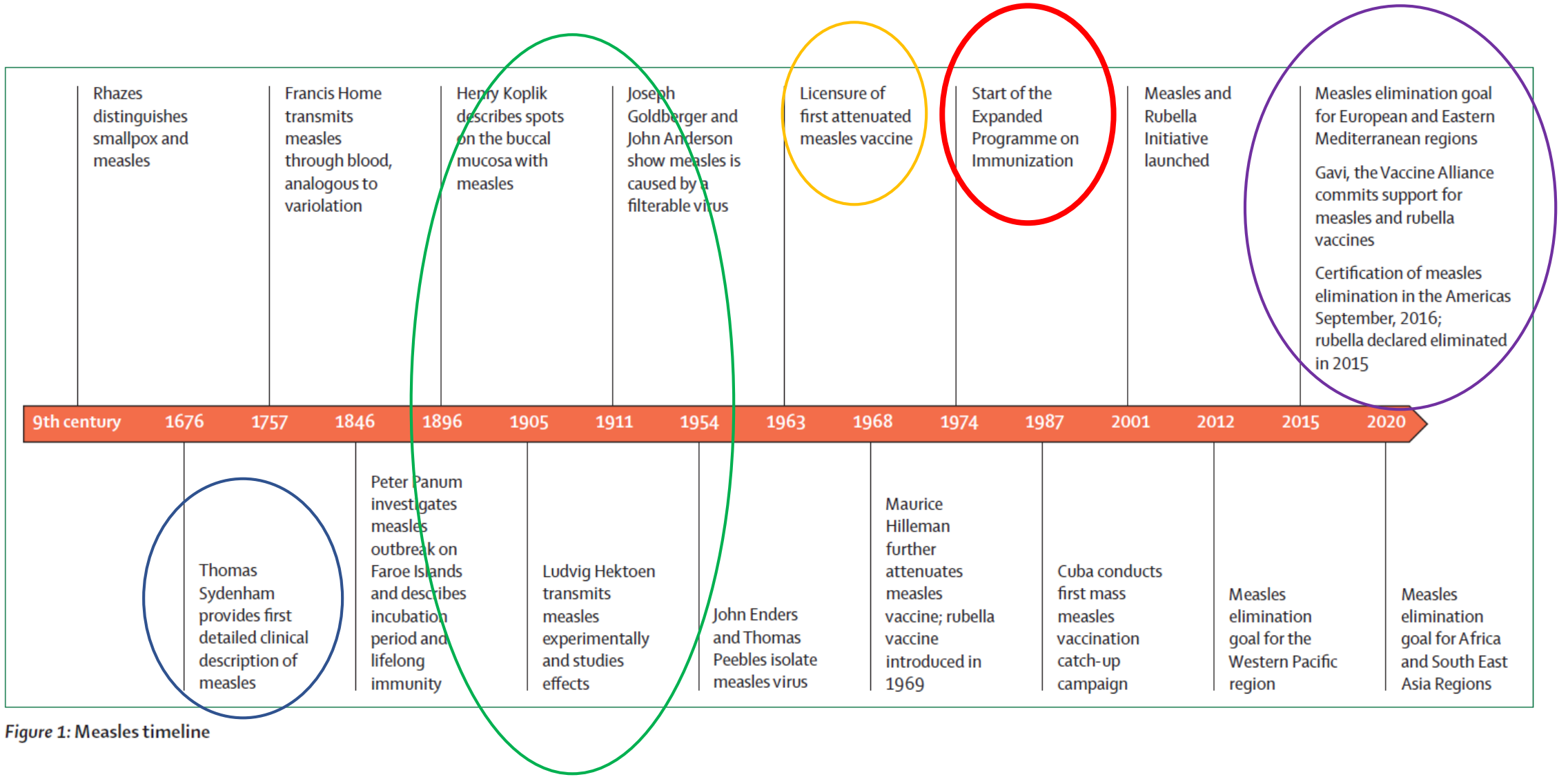
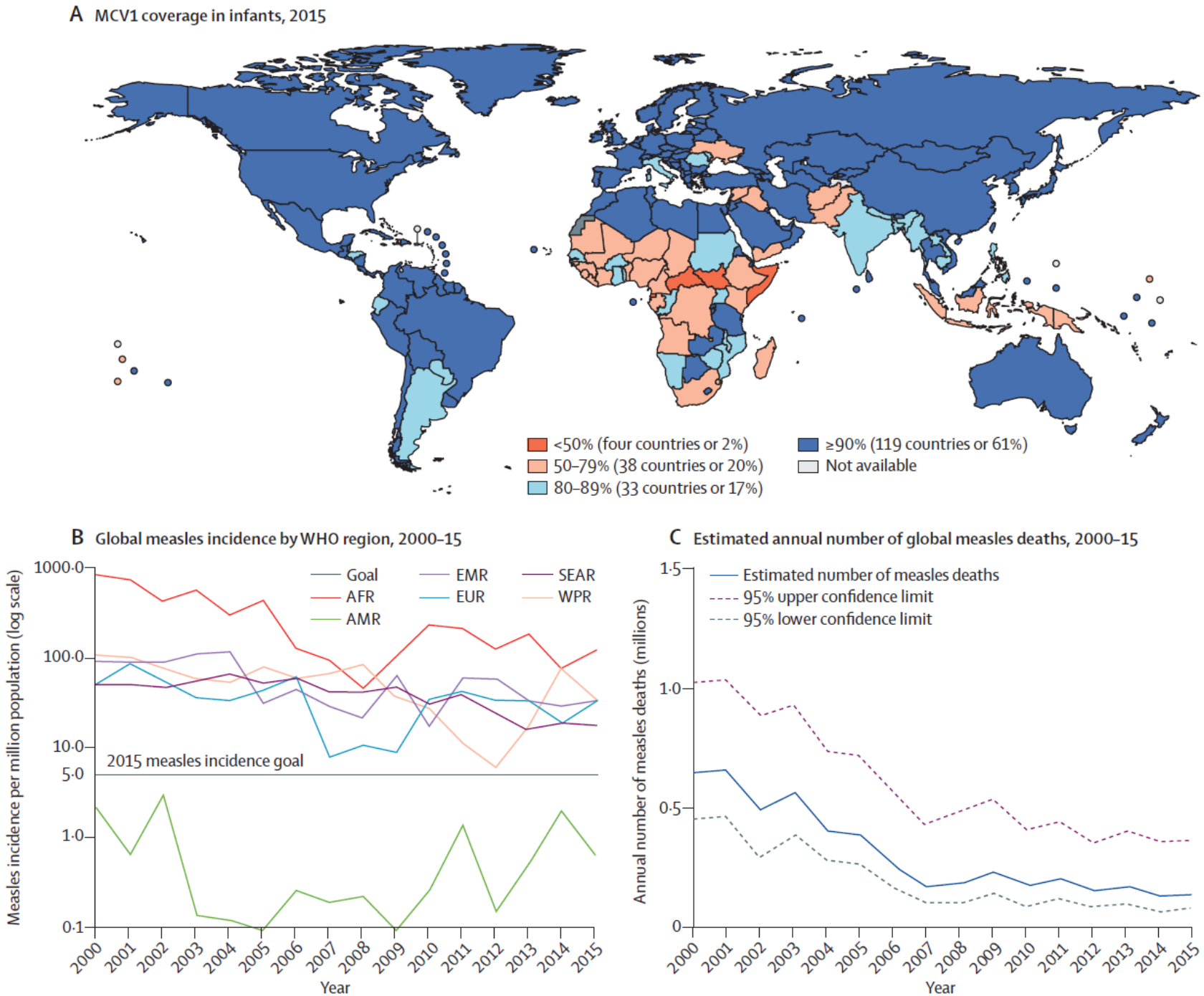
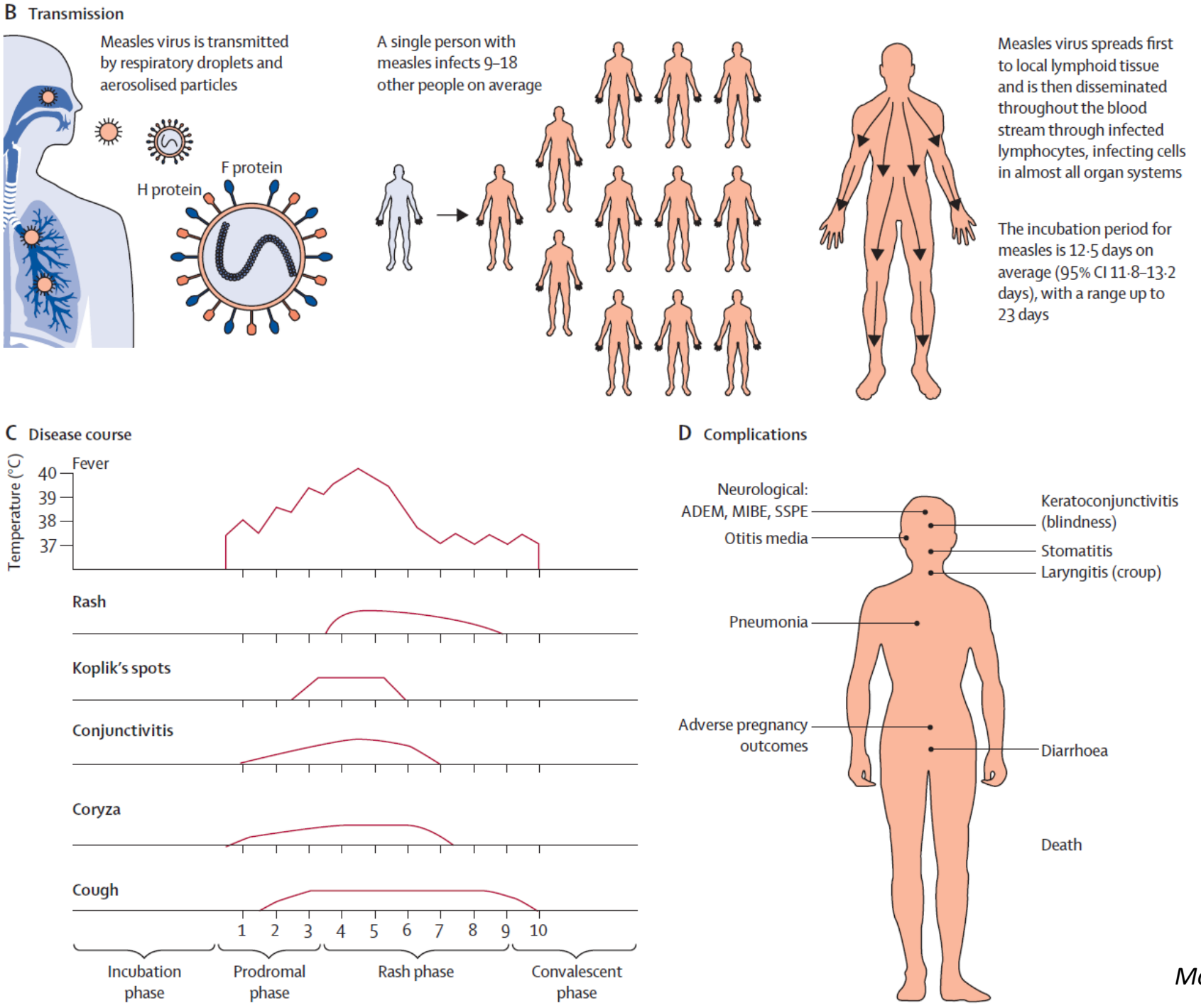


Figure 1: **Measles timeline**

Moss, Lancet, 2017

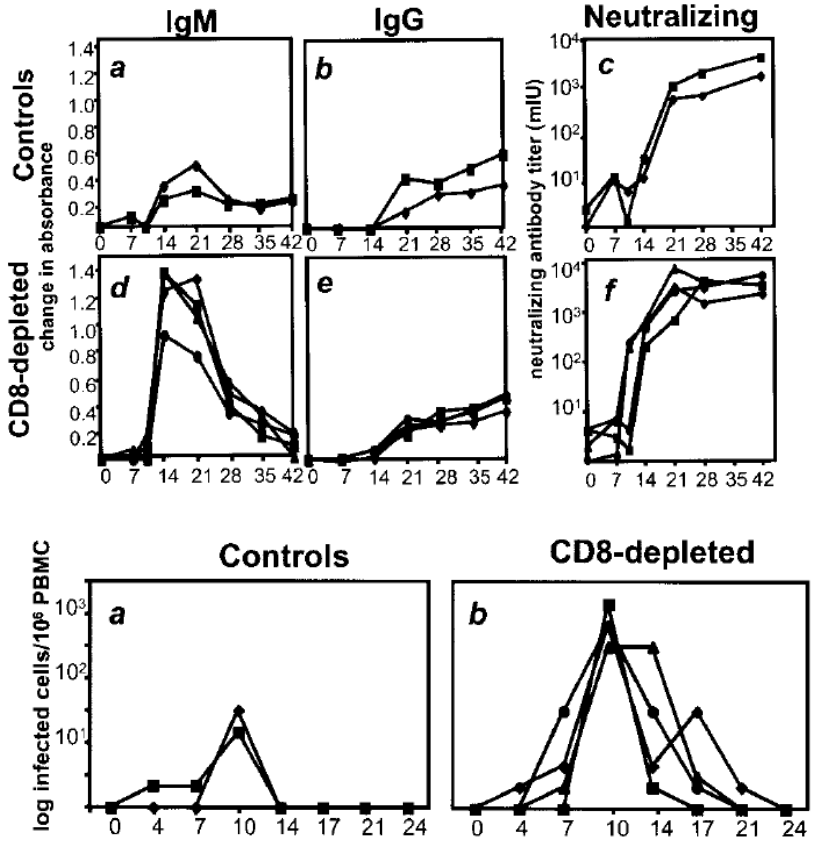


Moss, Lancet, 2017



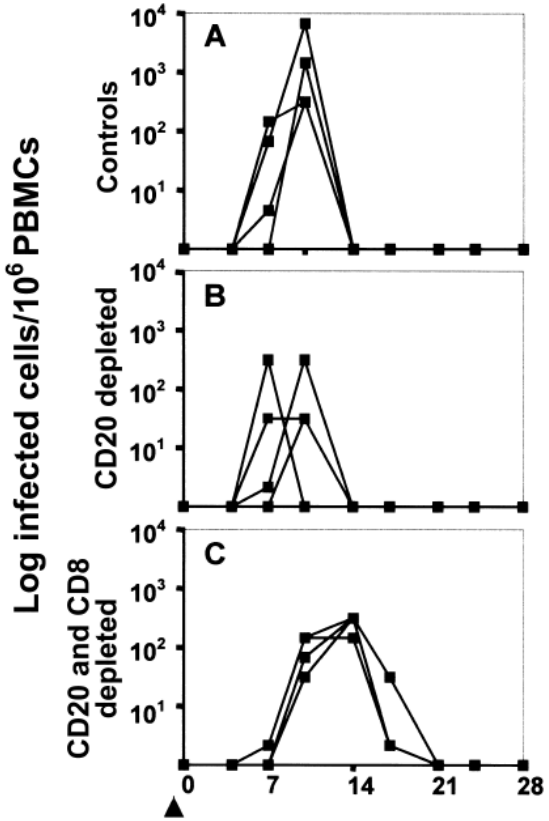
Moss, Lancet, 2017

An increased risk in SOT ?

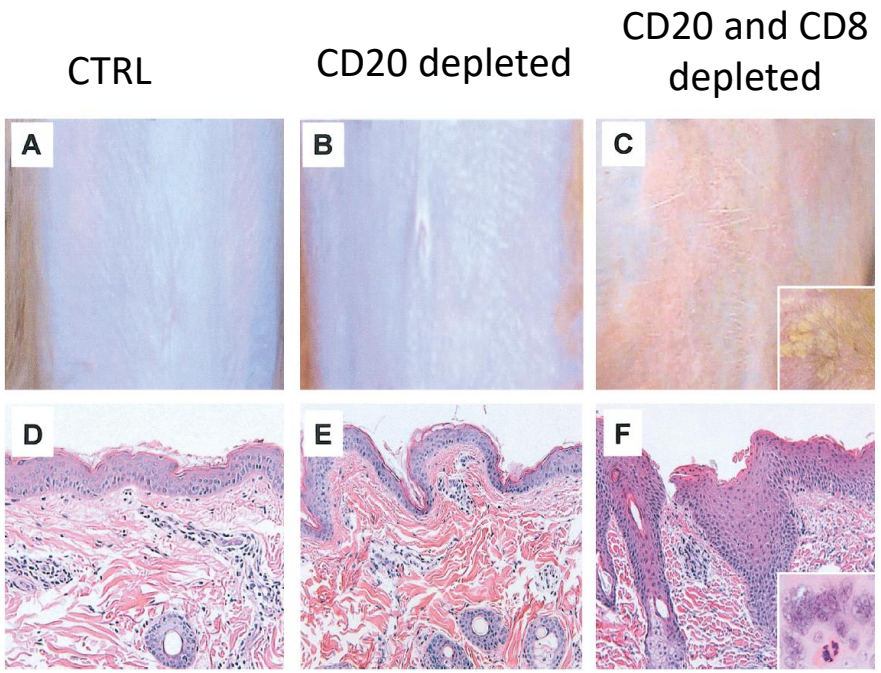


Higher and longer MV viremia in CD8+ depleted Monkeys

Permar et al. J Virol, 2003



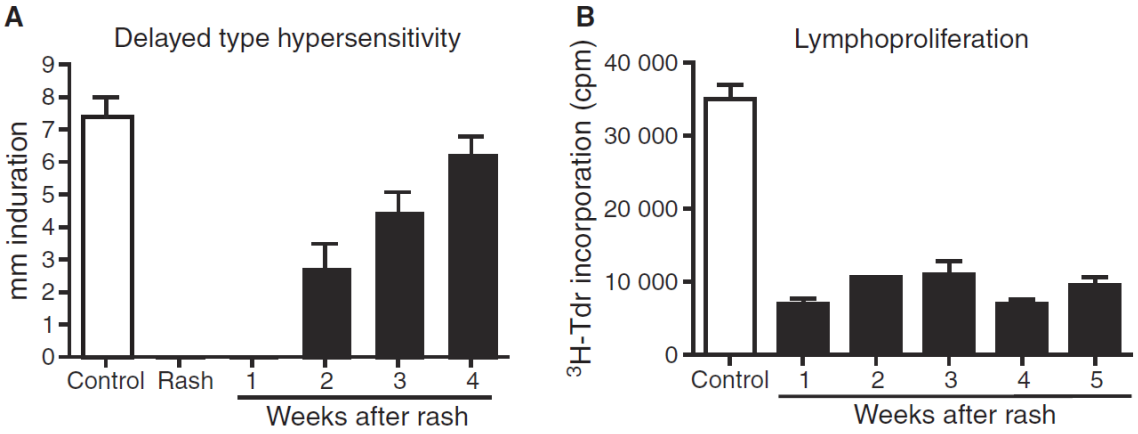
Longer viremia in CD20 and CD8 depleted monkeys



Extensive and more severe rash in CD20 and CD8 depleted monkeys

Permar et al. J Inf Diseases, 2004

An increased risk in SOT ?



Delayed global immune response following MV viremia : higher risk of co-infections ?

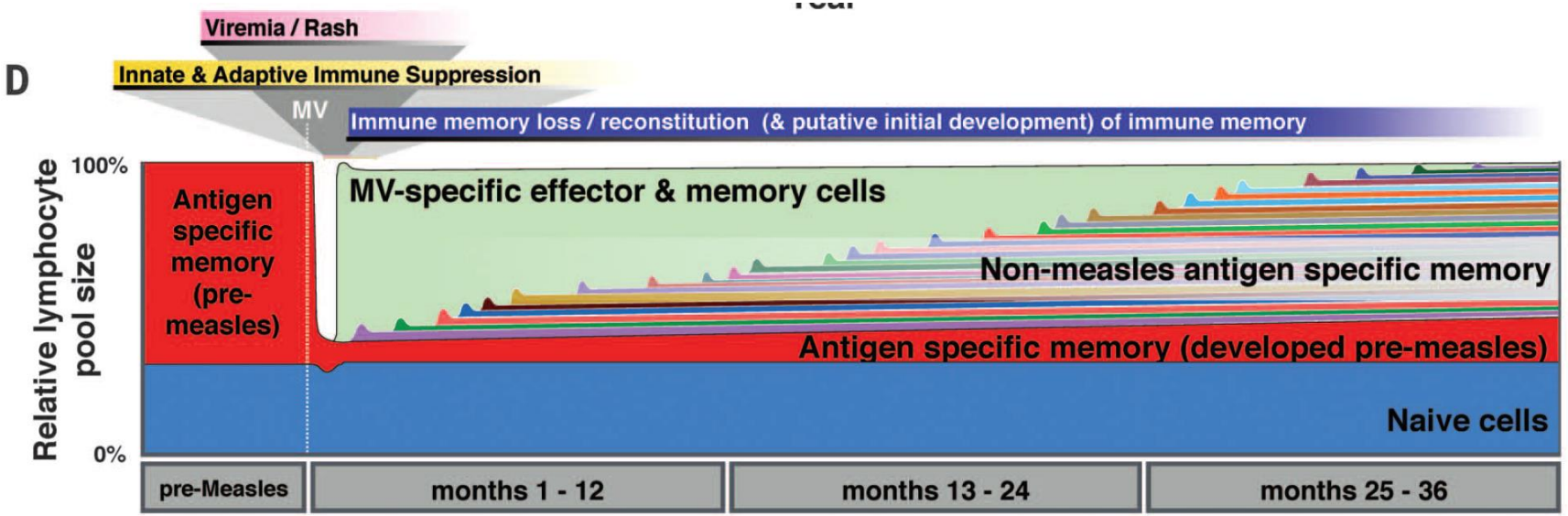
Griffin, Immunol Reviews, 2010

TABLE 2. Selected clinical characteristics (%) of children exposed versus unexposed to measles at recruitment, Cohort Study of Childhood Morbidity After Measles in Urban Bangladesh, 1995–1996†

Characteristic	Hospital cohorts		Community cohorts	
	Exposed (n = 117)	Unexposed (n = 117)	Exposed (n = 137)	Unexposed (n = 137)
Watery diarrhea‡	91	93	26	4**
Mucoid diarrhea‡	43	29*	13	3**
Bloody diarrhea‡	20	11	3	1
ALRI§: WHO§ criteria	23	10**	36	1***
Oral candidiasis	14	4**	7	2*
Stomatitis	8	4	25	3***
Stunted¶	57	47	63	57
Wasted#	61	63	38	8**
Vitamin A deficient††	77	76	84	30***

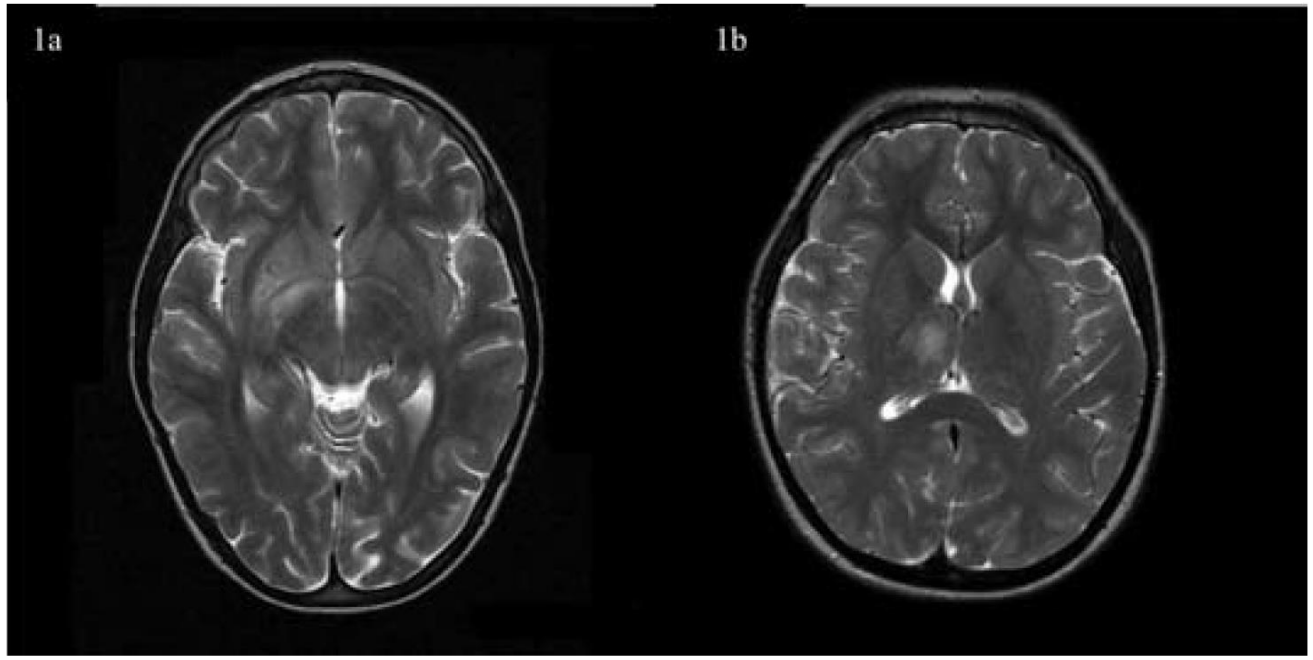
More secondary infectious complications following MV

Akkramuzzaman et al, Am J Epidemiol, 2000



Mina et al., Science, 2015

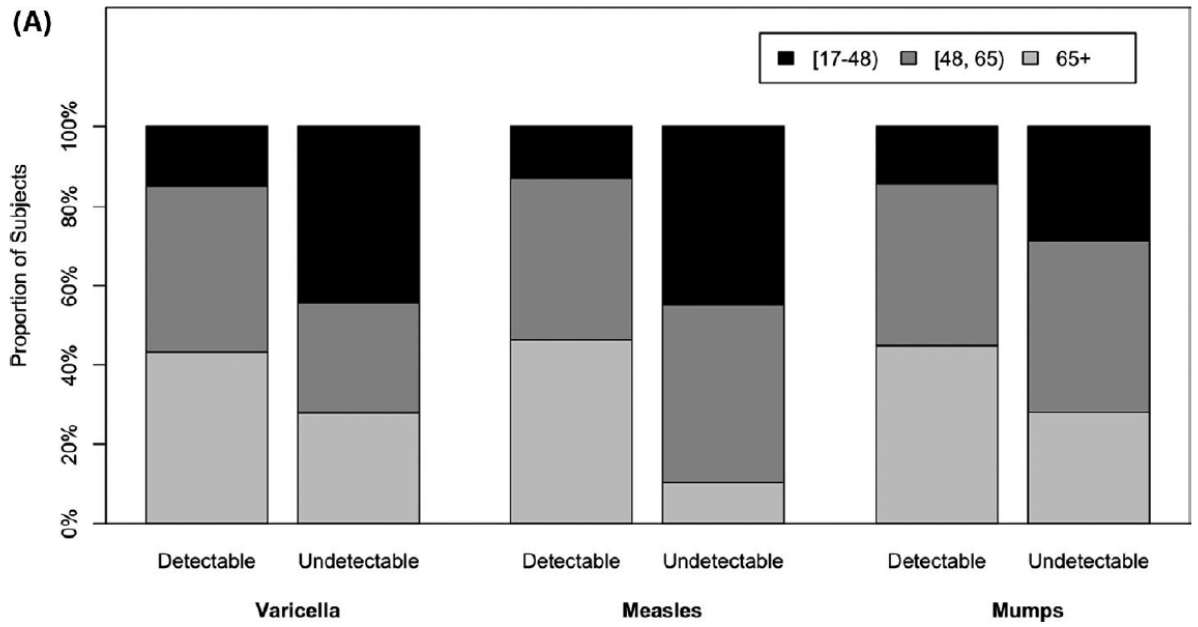
Acute encephalitis



Turner et al, AJT, 2006

- Uncomplete vaccination schedule
- Delayed diagnosis
- Thalamic and glial lesions
- Reduction of immunosuppression + IV-Ig + Ribavirin

Screening for Mesles vaccination before transplantation



40% of seronegative patients before Lung Transplant

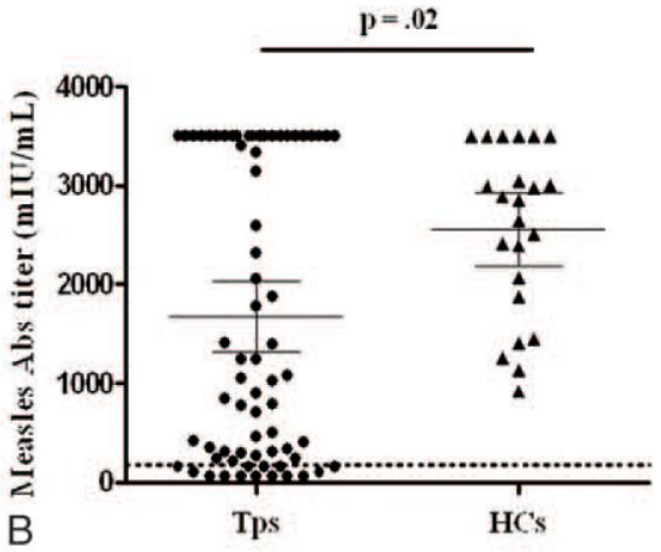
Hostetler et al, AJT, 2021

Vaccine	Paediatric renal transplant recipients (%)	Healthy children and adolescents (%)[b]
Hepatitis B ($n = 155$)[a]	83.3	72.6[c]
HBsAb >10 IU/L	83.3	72.6[c]
Complete vaccination ($n = 133$)	85.8	n.a.
Incomplete vaccination (n = 22)	68.2	n.a.
HBsAb >100 IU/L	58.1	60.9[c]
Complete vaccination ($n = 133$)	60.2	n.a.
Incomplete vaccination ($n = 22$)	45.5	n.a.
Rubella ($n = 88$)	89.8	100[d]
Complete vaccination ($n = 72$)	88.9	n.a.
Incomplete vaccination ($n = 16$)	93.8	n.a.
Varicella ($n = 77$)	79.2	96.8[d]
Complete vaccination ($n = 72$)	79.2	n.a.
Incomplete vaccination ($n = 5$)	80.0	n.a.
Measles ($n = 99$)	76.8	97.0[d]
Complete vaccination ($n = 84$)	77.4	n.a.
Incomplete vaccination ($n = 15$)	73.3	n.a.

20% of seronegative patients before KT

Hocker et al, Ped Nephrol, 2018

Post vaccine antibodies after transplantation



No IgG (and lower titers) after KT in 20% of patients

Rocca et al, Medicine, 2016

	Non-immune (n = 16, 22%)		Immune (n = 56, 78%)		
	n	%	n	%	*P*-value
Number of pre-LT vaccine doses					
1	12	75%	21	38%	0.026
2	4	25%	31	55%	
≥3	0	0%	4	7%	
Age at vaccine					
<1 y	4	25%	2	4%	0.006
≥1 y	12	75%	54	96%	
Age at transplant					
≤2 y	9	56%	11	20%	0.004
>2 y	7	44%	45	80%	
Post-LT booster	2	13%	4	7%	0.494
Years from last vaccine to transplant					
≤1 y	10	63%	22	39%	0.099
>1 y	6	38%	34	61%	

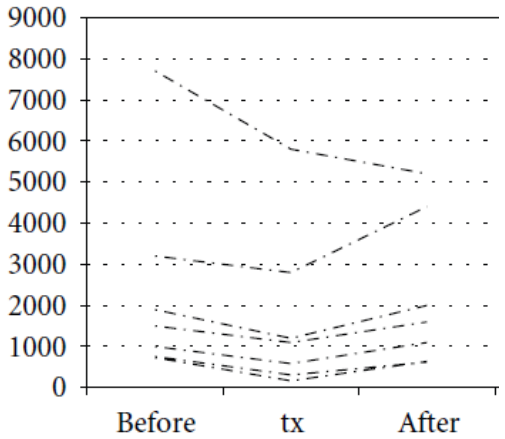
Absence of IgG in 22% of LT

Yoeli et al, Ped Transplant, 2019

Vaccine	Patients, *n* (%)
Diphtheria	7/15 (46.7)
Hepatitis A	5/28 (17.9)
Hepatitis B	14/75 (18.7)
Measles	3/42 (7.1)
Mumps	4/34 (11.8)
Pertussis	3/4 (75.0)
Pneumococci	6/13 (46.2)
Rubella	5/45 (11.1)
Tetanus	7/24 (29.2)
Varicella	12/48 (25.0)

Patients with a seropositivity loss during the 1st year post KT

Hocker et al, Ped Nephrol, 2018



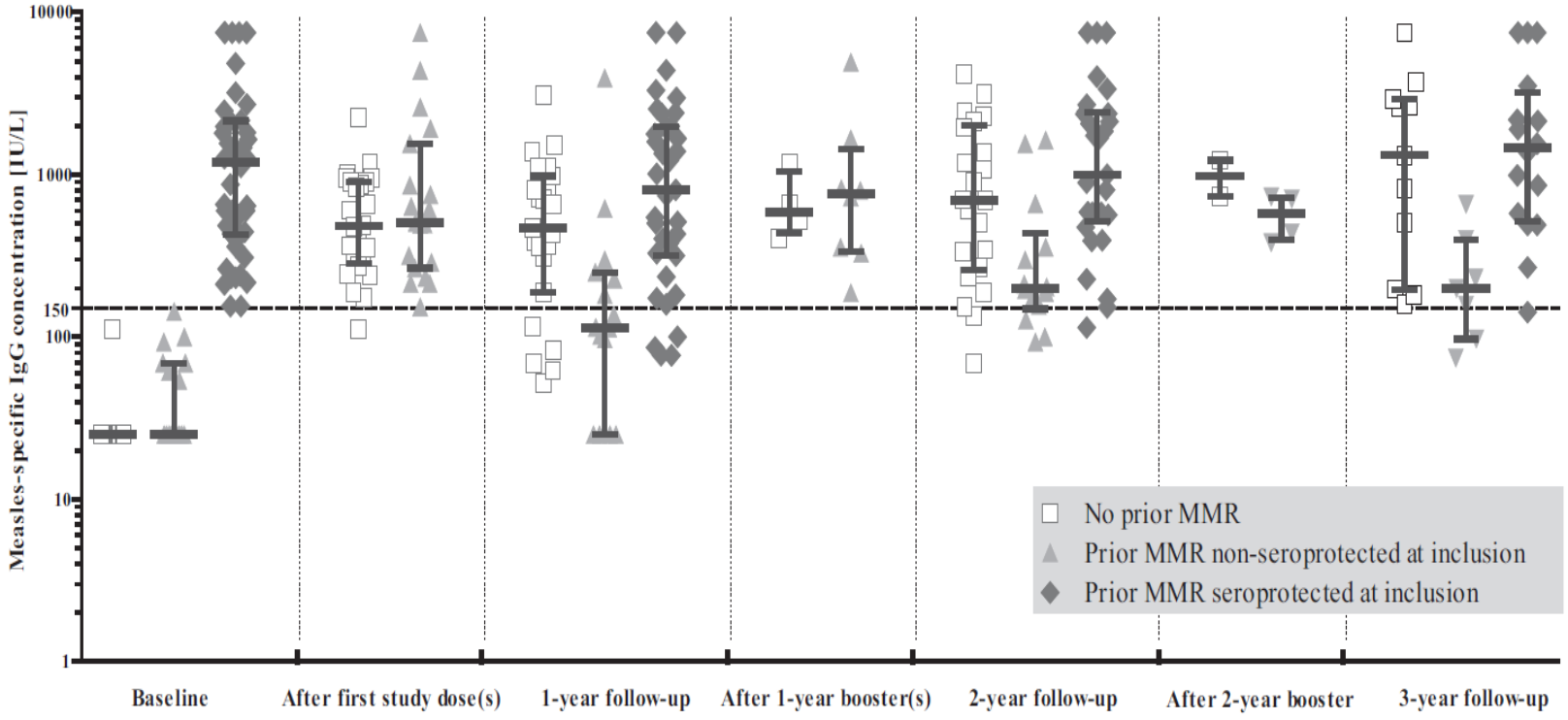
Littte and reversible effect of PEX

Warmington et al, Ped Transplant, 2005

Virus	Type of Transplanted Organ (No.)	Seronegative Prior to Transplantation	Seropositive Prior to Transplantation
Measles	All SOT recipients (1182)	28 (2.4)	1127 (95.3)
	Heart (84)	2 (2.4)	80 (95.2)
	Lung (210)	7 (3.3)	199 (94.8)
	Liver (285)	1 (0.4)	277 (97.2)
	Kidney (577)	18 (3.1)	548 (95)
	Liver-kidney (8)	0 (0.0)	7 (88)
	Pancreas-kidney (18)	0 (0.0)	16 (89)

Rezahosseini *et al, CID, 2020*

Vaccination after transplantation



Pittet et al, AJT, 2018

- Child Liver transplantation > 1 year, Low Tac, Ly > 750/mm3
- 46/90 were non protected (40% were previously vaccinated)
- Booster at one and two years if IgG < 150UI/L

Management of SOT recipients during a regional Mesles outbreak

Keeping You and Your Family Safe from Measles

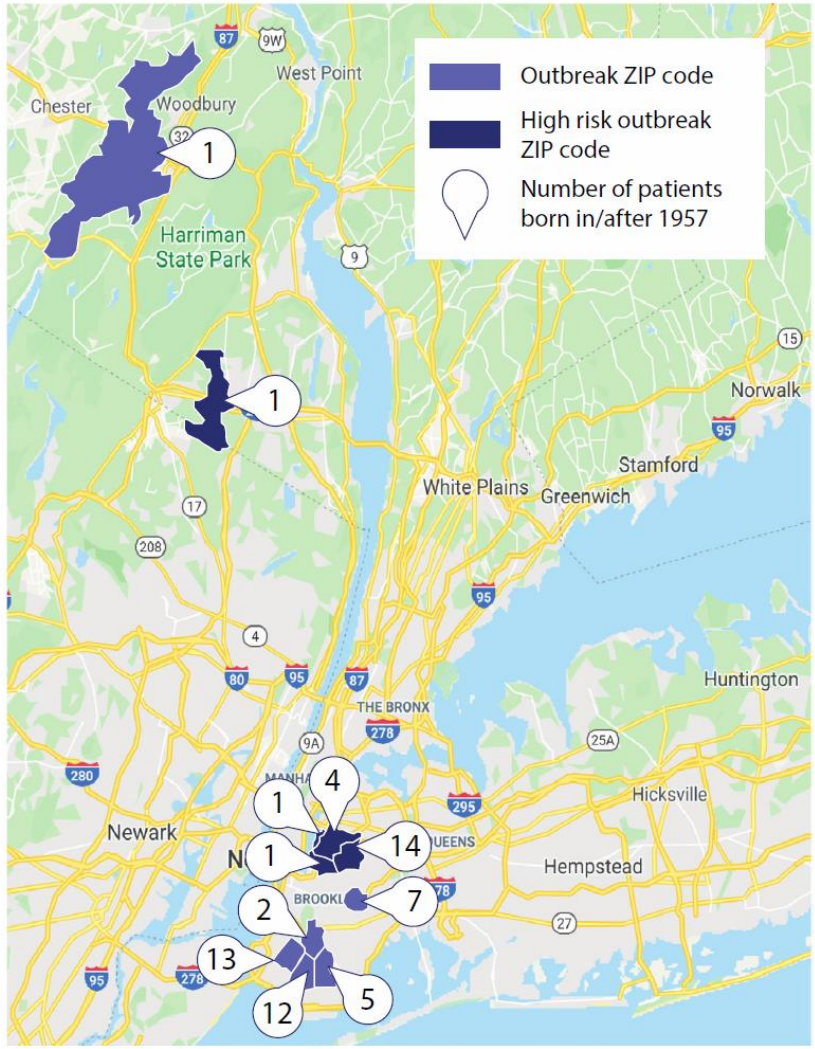
We know that your and your family's health and well being are very important to you. There is a measles outbreak in parts of Brooklyn and Rockland County. Measles is the most contagious germ and can be very serious. We want to make sure to partner with you and your family to keep you safe.

Here are some ways we can partner to keep you and your family safe from germs, colds and the measles:

- Make sure you and your visitors are free of fever, rash, or respiratory symptoms.
- Ask family and friends to wait to visit your home until they are healthy and don't have any of the above symptoms.
- Let your provider know if you have been exposed to someone who had measles over the past month.
- Make sure you, your guests, your other children and family caregivers wash hands when spending time with your child
- Make sure you and your visitors are vaccinated to prevent measles. Two doses of measles vaccine are recommended for everyone 12 months and older. **Important note:** This is not recommended for people severely immunocompromised.
- Please let us know if you would like more information about measles vaccinations.

Thank you for partnering with NYU Langone Health to keep your family safe.

Education of patients to risk-reduction



- Identification of patients at-risk in localisated areas
- Measles immunity testing if unknown

→

- Vaccine program
- Preventive Ig-IV

Kreiger et al, AJT, 2020

Use of IV Ig in post-exposure Mesles

SUMMARY OF FINDINGS

Summary of findings for the main comparison. Immunoglobulin compared to no treatment for preventing measles

Immunoglobulin compared to no treatment for preventing measles

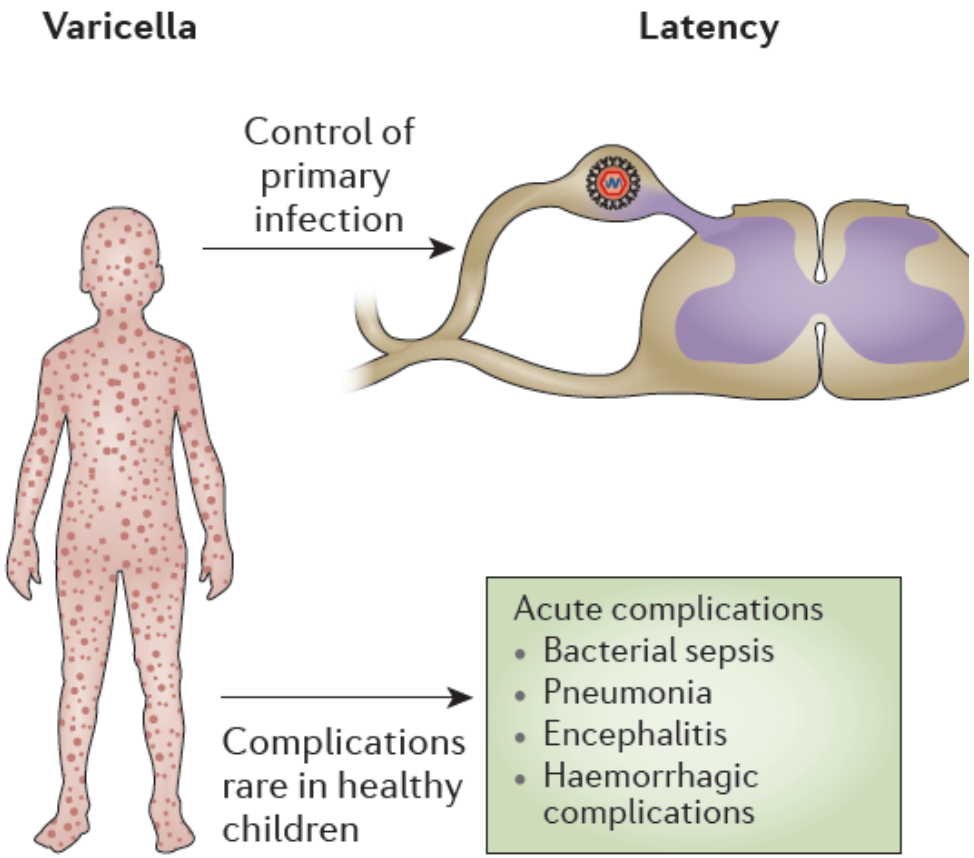
Patient or population: susceptible people exposed to measles
Settings: community and hospitals
Intervention: immunoglobulin
Comparison: no treatment

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	No treatment	Immunoglobulin				
Measles cases - gamma globulin	Study population		RR 0.17 (0.08 to 0.36)	545 (2 studies)	⊕⊕⊕⊖ **moderate** 4,5,10,11,12	
	110 per 1000	19 per 1000 (9 to 40)				
	Moderate					
	402 per 1000	68 per 1000 (32 to 145)				
Mortality due to measles	Study population		RR 0.24 (0.13 to 0.44)	893 (3 studies)	⊕⊕⊕⊕ **high** 3,5,7	
	142 per 1000	34 per 1000 (18 to 62)				
	Moderate					
	40 per 1000	10 per 1000 (5 to 18)				
Complications due to measles	Study population		RR 0.18 (0.05 to 0.6)	832 (3 studies)	⊕⊕⊕⊖ **moderate** 3,4,5,7	
	52 per 1000	9 per 1000 (3 to 31)				
	Moderate					
	71 per 1000	13 per 1000 (4 to 43)				
Adverse events	Study population		Not estimable	0 (0)	See comment	Adverse events were poorly reported or not measured in all but one study comparing immunoglobulins and no treatment. No serious adverse events were reported.13
	See comment	See comment				
	Moderate					

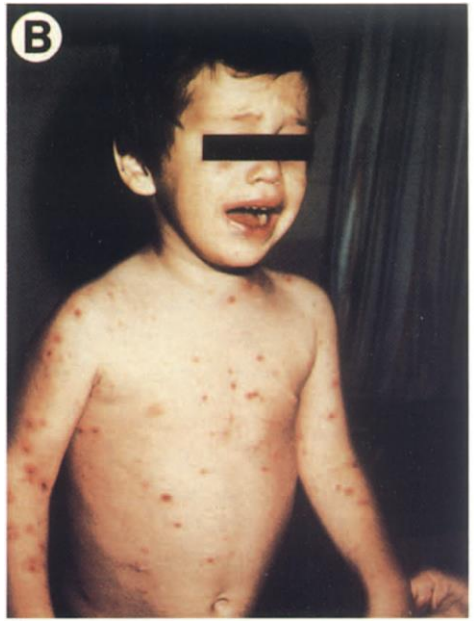
Young et al. Cochrane Database, 2014

Varicella

Acute VZV infection



Gershon et al. Nature Rev, 2015



Strauss et al. Ann Int Med, 1988

Organ	HR	95% CI	p
Renal	1.0		
Liver	0.81	0.44 – 1.49	0.50
Lung	2.23	1.02 – 4.84	0.04
Heart	2.32	1.33 – 4.06	<0.01

Immunosuppression' impact

Gourishankar et al, AJT, 2004

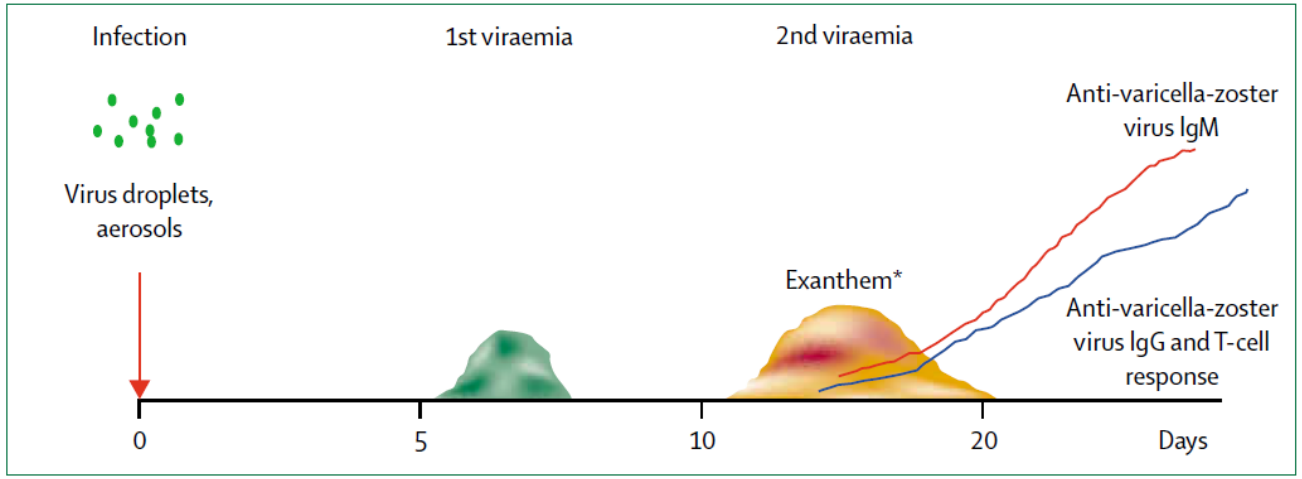
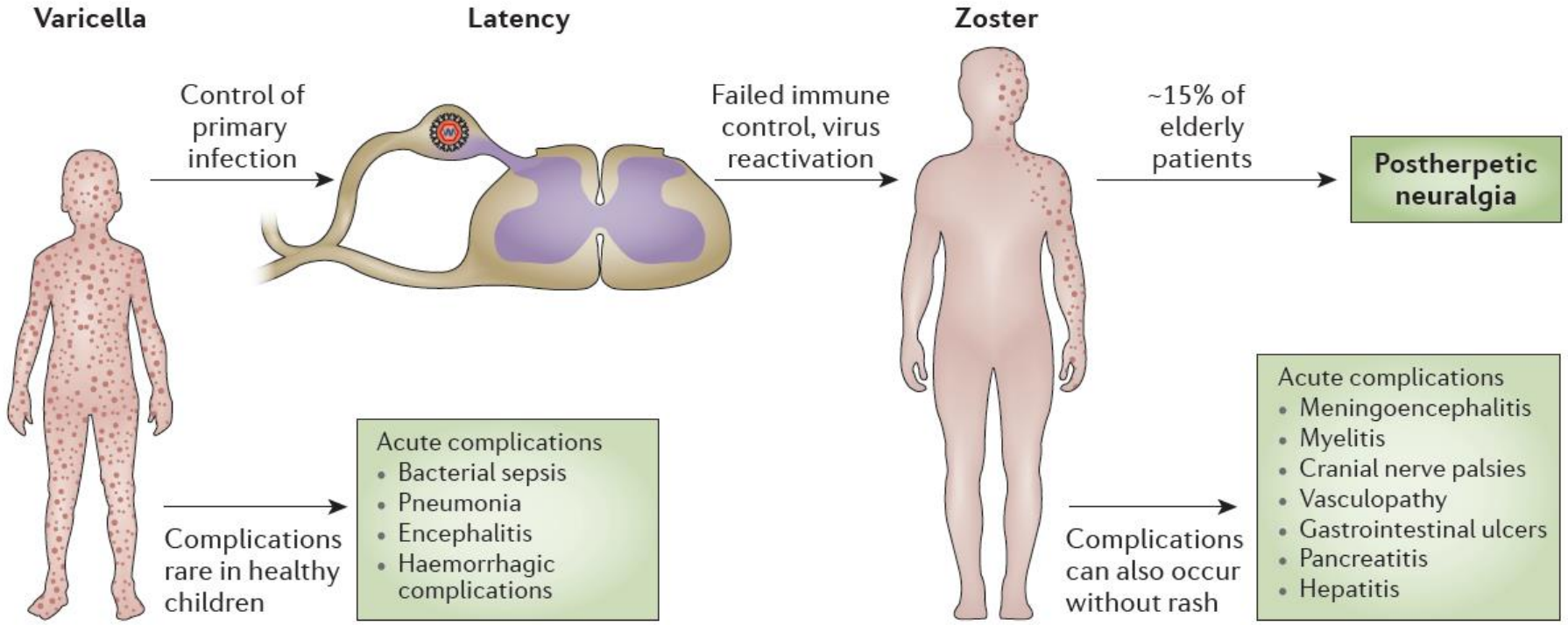


Figure 3: **Schematic representation of pathogenesis of varicella zoster virus infection**

*Onset varies between 10 and 21 days after exposure.

Heininger et al. Lancet, 2006

Herpes-Zoster



Gershon et al. Nature Rev, 2015

Acute varicella treatment in SOT

Table 2. Complications Occurring during Treatment of Varicella–Zoster Infection with Acyclovir and Vidarabine.

Complication	Treatment Group		P Value*
	Acyclovir	Vidarabine	
	no. of patients		
Cutaneous dissemination†	0/10	5/10	0.016
Treatment failure	0/11	4/11	0.05
Fever ≥38.5°C	2/11	8/11	0.015
Additional therapy required‡	2/11	7/11	0.04

Benefit of early Acyclovir IV

Shepp et al, NEJM, 1986

Table II. Chickenpox treatment and outcome

	Pred-Aza	Pred-Aza-CsA
No. of cases	30	38
VZIG*	12	15
Reduction in Pred	0	1†
Aza held	30	36‡
CsA held	--	2
Acyclovir		
Parenteral only	24	23
Parenteral, then oral	6	9
Oral only	0	5
Not given	0	1
Outcome		
Severe disease§,¶	5	4
Acute rejection*	1	2
Death¶	0	0

*Administered within 3 weeks before onset of rash.
†Pred was given on alternate days in one patient.
‡Aza was reduced by 50% in one patient and continued unchanged in another.
§Pneumonitis, hepatitis, or fever/rash >7 days (Pred-Aza vs Pred-Aza-CsA, $p > 0.1$ by chi-square).
¶The single death occurred in a patient receiving only Pred (1 mg/day) at the time of chickenpox infection, 2 months after unsuccessful cadaveric transplant. This patient had pulmonary, hepatic, esophageal, and adrenal involvement on postmortem examination.
*Acute rejection was diagnosed on clinical grounds in the Pred-Aza patient and was biopsy-proven in the Pred-Aza-CsA patients.

Reduction of Immunosuppression

Kashtan et al, J.Pediatric, 1997

Foscarnet if Acyclovir resistance

Acute varicella	Acyclovir 30 mg/kg IV in three divided doses (adults and children <1 y) OR 1500 mg/m^2 IV per day in three divided doses (children ≥1 y of age)[b]	Strong, low	• IV therapy can be changed to oral therapy once the patient has significantly improved • Careful monitoring of renal function is needed while on IV therapy, and dosing should be adjusted for renal insufficiency

Pergham et al, AJT, 2013

Pergham et al, Clin Transplant, 2019

Specific anti-VZV IgG ?

Herpes Zoster treatment in immunocompromised patients

Table II. Multicentre placebo-controlled trial of ACV in immunocompromised patients: comparison of median time to events in days by study group

	Diagnosis at entry			
	Localized cutaneous zoster		Cutaneous disseminated zoster	
Event	ACV $n = 28$	Placebo $n = 24$	ACV $n = 24$	Placebo $n = 18$
Cessation of new lesions	1·8	2·7	1·8	2·2
Cessation of viral shedding	2·6	3·3	1·4	2·6
Lesions 100% pustulated	4·2	6·8	4·3	4·3
Loss of pain	5·7	5·9	4·2	6·4
Lessions 100% scabbed	9·2	9·9	5·2	9·6
Loss of erythema	9·4	9·6	6·6	9·6
Lesions 100% healed	22·4	21·3	20·6	26·5

Acyclovir reduces progression of cutaneous HZ

Balfour et al, JAC, 1983

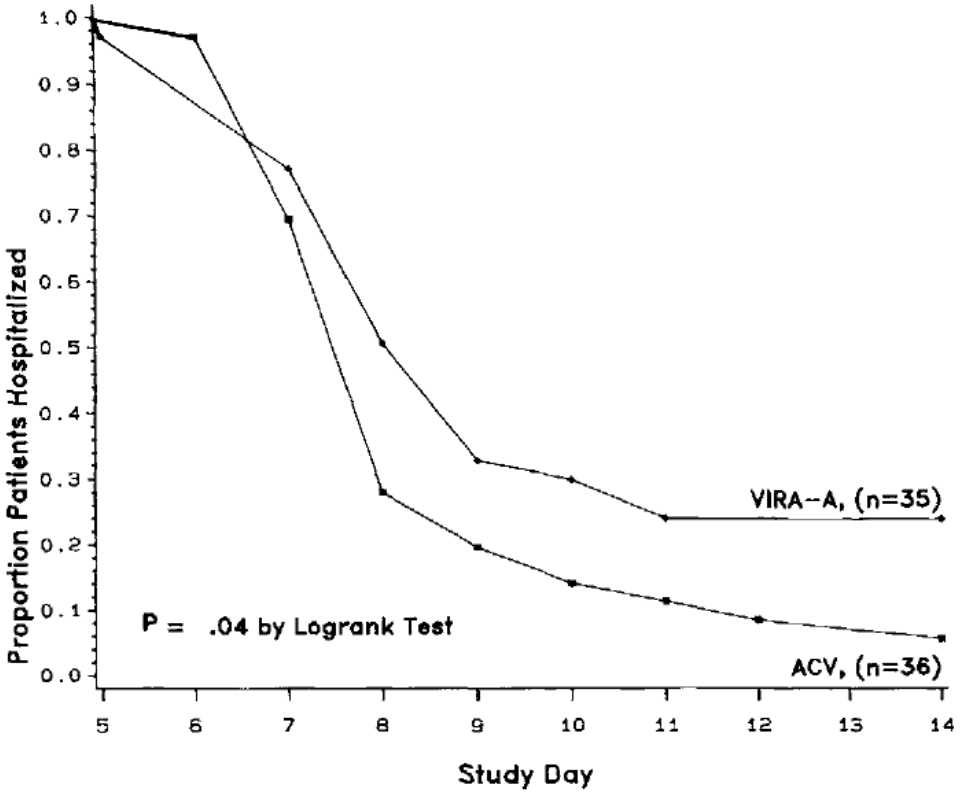


Figure 3. Evaluation of duration of hospitalization by treatment group. VIRA-A, vidarabine therapy; ACV, acyclovir therapy.

Acyclovir reduces progression of disseminated HZ

Whitley et al, J Inf Diseases, 1992

Herpes Zoster treatment in SOT

Herpes zoster Localized (Dermatomal)	Acyclovir 800 mg PO five times daily (adults and children ≥12 y of age) IV acyclovir is recommended in children <2 y of age (10 mg/kg IV every 8 h) or those who cannot tolerate oral therapy OR Valacyclovir 1 g PO three times daily (adults) 20 mg/kg PO three times daily (children ≥2 and ≤18 y of age)[a] OR Famciclovir 500 mg PO three times daily (adults only)	Strong, moderate	• Oral therapy is not recommended for young children <2 y of age, or patients with evidence of dissemination, tissue invasion, HZ ophthalmicus or oticus, or those with severe symptoms. These patients should be treated with IV therapy (see below) • Antivirals are typically given for at least 7 d or until lesions have crusted over, which may be delayed in immunocompromised hosts • Valacyclovir and Famciclovir are not FDA approved for treatment of herpes zoster, but are commonly used in clinical practice • Valacyclovir is only recommended for children ≥2-18 y of age • Careful monitoring of renal function is needed while on high-dose acyclovir therapy, and dosing should be adjusted for renal insufficiency
Herpes zoster disseminated or Invasive disease or Herpes zoster ophthalmicus or Ramsay-hunt syndrome/herpes zoster oticus	Acyclovir 30 mg/kg IV in three divided doses (adults and children)	Strong, moderate	• In disseminated disease IV therapy should be given for at for at least 7 d, but may need to be given for longer in patients with extensive involvement or CNS disease • Ophthalmology consultation is recommended for patients with ophthalmic involvement • Consideration for switch to oral therapy dependent on patient's clinical status • Careful monitoring of renal function is needed while on IV therapy, and dosing should be adjusted for renal insufficiency

Pergham et al, AJT, 2013
Pergham et al, Clin Transplant, 2019

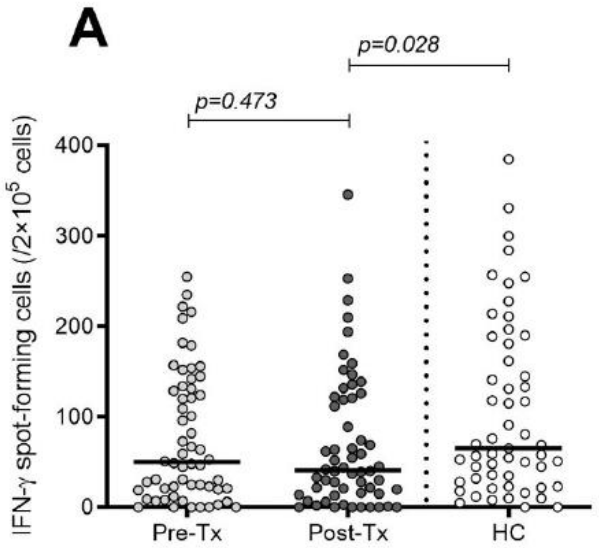
VZV prophylaxis

TABLE 2 Recommendations for VZV prevention in solid organ transplant recipients

Strategy	Pre-transplant	Post-transplant	Dosing	Comments
Varicella/HZ prevention				
Antiviral prophylaxis				
Acyclovir (and pro-drugs)	N/A	Short-term prophylaxis is recommended for patients who are HSV seropositive and not receiving CMV prophylaxis (Strong, high). Prophylaxis in VZV seropositive CMV/HSV seronegative recipients has not been studied but can be considered (Strong, very low)	Acyclovir 600-1000 mg/d PO in 3-5 divided doses (adults and children ≥2 y) Max dose in children is 80 mg/kg/d not to exceed 3200 mg/d IV acyclovir is recommended in children <2 y of age (5 mg/kg IV every 8 h) or those who cannot tolerate oral therapy *See reference 39 for dosing in children <2 y OR Valacyclovir 500 mg PO twice daily (adults only)	• Evidence in other populations for effectiveness against VZV, minimal data in SOT recipients. Alternate less frequent dosing (BID) for acyclovir has been described but has not been evaluated in SOT populations • Patients receiving CMV prophylaxis generally should be protected from VZV reactivation, unless they are receiving letermovir which does not prevent VZV reactivation. • Valacyclovir is only recommended for children 2 to <18 y of age and has not been studied as a prophylactic agent in children post-SOT • Lifelong risk of HZ limits use of these agents for long-term prevention.

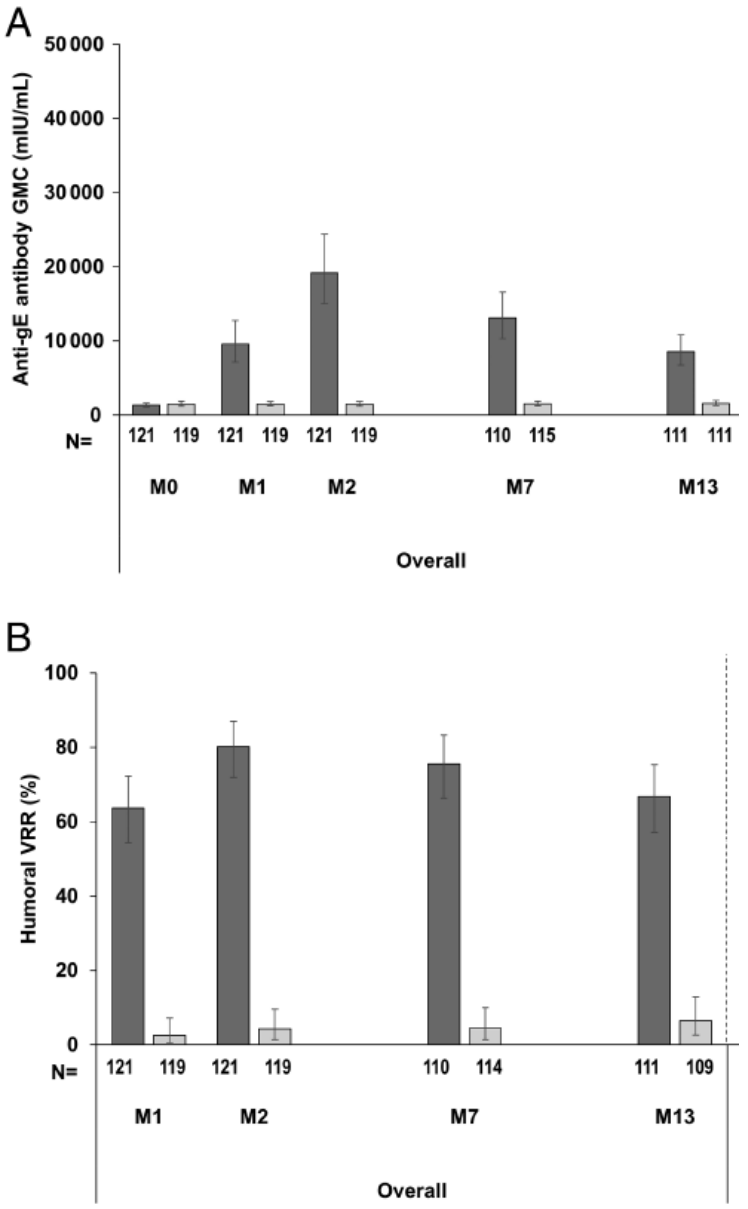
Pergham et al, AJT, 2013
Pergham et al, Clin Transplant, 2019

VZV vaccination



Cellular VZV immunity persists after transplantation

Rondaan et al, Antiviral Research, 2020



Vaccination after transplantation : safe and induces a robust humoral and celluar response

Vink et al, CID, 2019

VZV vaccination

Vaccination				
Varicella vaccine (Varivax®)	Yes, if seronegative (Strong, moderate)	Generally, contraindicated, but can be used with caution if seronegative in select populations (Weak, low)	Varivax® 0.5 mL administered SQ	• Vaccination has been shown to be safe in ESRD and ESLD patients • Minimum recommended age for vaccine is ≥6 mo of age • Do not give if <1 mo to transplant • Seroconversion rate reduced in immunosuppressed individuals • Caution should be used in post-transplant patients since live virus vaccine; education and close follow-up recommended. • Second dose can be given 4-8 wk after first dose (see package insert for guidelines)
Inactivated adjuvanted subunit herpes zoster vaccine (Shingrix®)	Yes, known seropositive and on minimal immunosuppression ≥50 y age (Strong, high), populations <50 y of age on minimal immunosuppression can be considered for vaccination (Weak, low)	Safety and efficacy studies ongoing (Weak, moderate)	Shingrix® 0.5 mL administered IM Two doses at 0 and 2-6 mo	• Currently only FDA approved for patients ≥50 y of age • Side effects are common, and frequently include pain at injection site, fever and chills/myalgias • Data demonstrate vaccine immunogenicity and safety in carefully selected renal transplant patients on immunosuppressive therapy at low risk for rejection, Efficacy data are not available to date • Patients with primary autoimmune diseases (eg, systemic lupus erythematous, etc) and or at moderate/high risk for rejection were excluded from the trial so data on safety is unknown • Prospective studies have not been done in children <18 y of age.
Live-attenuated herpes zoster vaccine (Zostavax®)	Alternative to Inactivated Adjuvanted Vaccine for >50, if not severely immunosuppressed (Strong, high)	Contraindicated (Strong, low)	Zostavax® 0.5 mL administered SQ	• Follow label indications, as no evidence that vaccine is safe in severe organ dysfunction or post-transplant • If patient meets label indications can be considered, but should be given at least 3-4 wk prior to

Pergham et al, AJT, 2013
Pergham et al, Clin Transplant, 2019

Post-exposure prophylaxis

FDA Approval of an Extended Period for Administering VariZIG for Postexposure Prophylaxis of Varicella

Weekly
March 30, 2012 / 61(12);212-212

VariZIG (Cangene Corporation, Winnipeg, Canada) is the only varicella zoster immune globulin preparation available in the United States for postexposure prophylaxis of varicella in persons at high risk for severe disease who lack evidence of immunity to varicella and are ineligible for varicella vaccine. VariZIG is available in the United States through an investigational new drug (IND) application expanded access protocol (*1*). VariZIG is a purified immune globulin preparation made from human plasma containing high levels of anti–varicella zoster virus antibodies (immunoglobulin G). In May 2011, the Food and Drug Administration (FDA) approved an extended period for administering VariZIG. The period after exposure to varicella zoster virus during which a patient may receive VariZIG, which had been 96 hours (4 days), is now 10 days (*1*). VariZIG should be administered as soon as possible after exposure (*1*).

Limited data suggest that the incidence of varicella is comparable among persons who receive varicella zoster immune globulin within 4 days of exposure and those who receive it more than 4 days (up to 10 days) after exposure and attenuation of disease might be achieved with administration of varicella zoster immune globulin up to 10 days after exposure (*2–5*). One study indicated an increase in varicella incidence with increasing time between exposure and administration of the immune globulin, but disease was attenuated in all cases (*6*).

VariZIG can be obtained by health-care providers from the sole-authorized U.S. distributor, FFF Enterprises (Temecula, California), by calling 800-843-7477 at any time or by contacting the distributor online at http://www.fffenterprises.com. As with any product used under an IND protocol, patients must give informed consent before receiving the product.

Advisory Committee on Immunization Practices (ACIP) recommendations regarding indications for the use of VariZIG remain unchanged (*7*,*8*). Patients without evidence of immunity to varicella (i.e., without a health-care provider diagnosis or verification of a history of varicella or herpes zoster, documentation of vaccination, or laboratory evidence of immunity or confirmation of disease) who are at high risk for severe disease and complications, who have been exposed to varicella or herpes zoster, and are ineligible for varicella vaccine, are eligible to receive VariZIG (*7*). Patient groups recommended by ACIP to receive VariZIG include the following:

- Immunocompromised patients.
- Neonates whose mothers have signs and symptoms of varicella around the time of delivery (i.e., 5 days before to 2 days after).
- Premature infants born at ≥28 weeks of gestation who are exposed during the neonatal period and whose mothers do not have evidence of immunity.
- Premature infants born at <28 weeks of gestation or who weigh ≤1,000 g at birth and were exposed during the neonatal period, regardless of their mothers' evidence of immunity status.
- Pregnant women.

Post-exposure prophylaxis

Post exposure prophylaxis (serongative patients only)				
Immunoprophylaxis				
VZV immunoglobulin (VZIG, VariZIG™)	Yes, if seronegative (Strong, moderate)	Yes, if seronegative (Strong, moderate)	VariZIG 125 units/10 kg body weight in single IM dose (Max dose is 625 units, min 125 units)	• Must be given as soon as possible—no efficacy if given more than 10 d post-exposure • Not 100% effective in clinical studies of preventing VZV, so close observation is suggested • If varicella develops, patient should be treated with antiviral therapy
IV immunoglobulin (non-specific IVIG)	Yes, if seronegative and VariZIG not available (Weak, low)	Yes, if seronegative and VariZIG not available (Weak, low)	IVIG 400 mg/kg IV single dose	• Amount of anti-VZV antibodies in IVIG is variable, and should only be considered if VZV-specific immunoglobulin therapy is not available
Antiviral prophylaxis				
Acyclovir[a] (and pro-drugs)	Consider, if seronegative and VZIG or VariZIG not available or in addition to immunoprophylaxis (Weak, low)	Consider, if seronegative and VZIG or VariZIG not available or in addition to immunoprophylaxis (Weak, low)	Acyclovir 800 mg PO four times daily (adults) 20 mg/kg PO four times daily (maximum 800 mg four times a day, ≥2 y of age) 30 mg/kg IV per day in three divided doses (adults and children) OR Valacyclovir 1 g PO three times daily (adults)	• Given 7-10 d after exposure for 7 d • Alternatively, some experts recommend dosing being given days 3-22 after exposure (or till day 28 if given immunoprophylaxis) • Caution with patients with underlying renal dysfunction as dosing may need to be reduced • IV acyclovir is recommended in children <2 y of age or those who cannot tolerate oral therapy • Valacyclovir is only recommended for children 2 to <18 y of age and has not been studied as a prophylactic agent in children post-SOT

Pergham et al, AJT, 2013
Pergham et al, Clin Transplant, 2019

The Case...

20 ans : 2e greffe rénale (dec 2019)

ATCD :

- dysplasie rénale congénitale/IEC grossesse.
- 1ere greffe a l'age de 6 ans.
- LAL T a l'age de 13 ans : induction puis allogreffe.
- 15 ans : rejet de greffe rénale, puis transplantectomie sur lymphoproliferation EBV induite

Induction Lymphodéplétive (Thymo) puis CNI/MMF/Steroids

CMV : D-/R- : pas de Rovalcyte

Pas de complications immédiates : RAD

The Case...

7 Mars 2020 : Douleurs abdominales non fébriles
- cytolyse et cholestase 4N, pas d'IRA
- echo abdo, TDM : RAS

12 mars :
- eruption pustuleuse cuir chevelu et racine de cuisse
- aggravation du BH, TP 67%
- céphalées
- Syndrome activation macrophagique

➔ Arret de l'immunosuppression, relai hydrocortisone. Acyclovir IV 15mg/kg/8h. Ig anti VZV.

14 mars :
- défaillance hépatique TP 25%
- Troubles de conscience

➔ Transfert Réa Rennes

The Case...

En réanimation :

- Stabilisation (pénible) du foie : pas de greffe
- Méningite a VZV
- Pneumonie a VZV + surinfection Aspergillus
- Fièvre malgré Acyclovir IV : bactériémie à Corynebactérium : Dapto

Un peu mieux : transfert aux Soins de Néphro

The Case...

Aux soins de Néphro (avril 2020)

- Doucement mieux mais réaggravation rapide : fièvre, troubles de conscience
- PL = Méningite a Corynebactérium : retour en réa : Mero + Dapto (6 sem)
- Pas d'abcès, pas de ventriculite mais vascularite cérébrale : reprise d'une corticothérapie + IV-Ig (+ Ig-VZV)
- Amélioration : Soins de néphro
- Relai Acyclovir per-os
- RAD (12 mai)

The Case...

15 mai

- Consultation post-hospit : Baisse Acuité Visuelle
- Ophtalmo = Retinite a VZV bilatérale
- Genotypage VZV intra-retinien : résistance acyclovir (pas dans le sang)
- Foscarnet IV + IO, baisse de la corticothérapie
- Dégradation de fonction rénale, troubles métaboliques : Acyclovir IV + Foscarnet IO

6 juin

- Céphalées fébriles, troubles de conscience
- PL : récidive de méningite a Corynébactérie : Penem et Dapto-R
- Liné puis Tidézolide + Rifampicine avec dosages intra-thécaux (12 sem)

The Case…

- Amélioration de la rétinite gauche (perte de vision OD)
- RT VZV toujours positif dans l'œil et le sang
- Hypothèse : « débris » viraux détectés mais maladie controlée ?
- Relai acyclovir IV > per os ➔ Cytolyse et réapparition de la rétinite
- Reprise acyclovir IV + Foscarnet IO long cours
- A nouveau : troubles de conscience : pas de rechute méningite
- Hypertension portale sur fibrose hépatique sequellaire de VZV avec encéphalopathie hépatique => TIPS urgent
- Finalement… MPR puis HAD (mi juillet 2020)

The Case...

- Dec 2020 : Covid+
- « Miracle » : forme pauci-symptomatique et séroconversion rapide
- Donc système immunitaire qui récupère !
- Et donc : Rejet humoral en février 2021

The Case : la fin

- Staff : pas de traitement du rejet
- Juillet 2021 : Pic line bouché : relai zelitrex (doses curatives) per os avec dosages résiduels
- Septembre 2021 : Arret des injections intra oculaires
- Mais le VZV reste detectable dans le sang et l'humeur aqueuse….
- Encéphalopathie stabilisée sous duphalac et tixtar
- Creat qui dérive lentement

Le plus important :

- Vivant
- Est retourné au lycée
- Projette un séjour a Dysneyland avec ses amis (est vacciné Covid)