VLA-4 or LPAM-2 participates, for example, in the inflammatory response in asthma but does not contribute to a minor extent if at all to the homing of lymphocytes to Peyer's patches.  

ICAM-3, a member of the immunoglobulin superfamily and constitutionally expressed on lymphocytes and intracellular Langerhans cells, should be added to the list of counter-receptors of LFA-1 since it has been cloned already in 1992.  

CD21, TAPA-1, Leu-13, and CD19 form a tetramer on the surface of B lymphocytes that upon crosslinking transmits signals into the cell but has not been identified to function as a ligand for B4 integrins in adhesive inter- 

actions.  

A recently described novel LAD syndrome termed LAD type 2 deserves being mentioned. This complex syndrome is characterised by recurrent bacterial infections with high neutrophil counts, mental retardation, short stature, and the Bombay blood phenotype. The analysis at the molecular level revealed the lack of expression of Sialyl-Lewis X (sialylated form of CD15), the carbohydrate ligand of the leucocyte adhesion molecules, E-selectin and P-selectin, on haemopoetic cells. Due to this defect neutrophils are no longer capable of adhering to endothelial cells using the E- and P-selectin pathway which initiates the transmigration of immunocompetent cells through the blood vessel. The underlying mechanism leading to the deficiency of Sialyl-Lewis X probably is a general defect in the fucosylation of glyco- 

proteins and carbohydrates. The disturbance of this process will also impair the Bombay blood phenotype and may lead to the understanding of the other components of the syndrome as, for example, the mental retardation.

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5 Bradbury LE, Kansas GS, Levy S, Evans RL, Tedder TF. The CD19/CD21 signal transduc- 


Dr El Habbal and Professor Strobel comment: We thank Dr Wagner for his interesting comments on our review on leucocyte adhesion deficiency (LAD) which focused on clinical presentation and management. We did not intend to discuss extensively the interplay between the homology of adhesion molecules and, for example, did not include the cadherins as a fourth family of adhesion molecules.

Migration of fine bore Silastic catheter to pulmonary artery  

EDITOR,—We wish to report a serious complica- 

tion that arose during insertion of a short catheter, which was to be used to administer intrave- 

nous antibodies to a 12 year old boy with cystic fibrosis. A fine bore Silastic neonatal catheter (Epicutaneous-Cava-Catheter model No 2184, Vygon) was used. This model has a detachable Silastic indwelling catheter that is inserted through a supplied 19 gauge needle. The proximal end of the catheter contains a short metal rod that is anchored within the distal end of the external supply line to pre- 

vent migration once sided. After venepuncture of the left basilic vein the catheter, unattached to the supply line, was threaded through the needle. The catheter was almost fully advanced so that the distal end might lie in a satisfactory position within the great vein. The needle was then removed from the vein and disengaged from the catheter by threading it over the proximal end. At this point the catheter was pulled back and when the needle was fully removed, the proximal end was still not visible. Chest radiography revealed the metal proximal tip of the catheter to be lying in the right pulmonary artery. The catheter itself was radiolucent. We presume that dynamic venous flow and negative intrathoracic pressure caused aspiration of the whole catheter into the pulmonary circulation. Subsequently, the patient underwent general anaesthetic and cardiac catheterisation. The catheter was successfully removed intact using a snare wire during a difficult and lengthy procedure.

We have used this type of line successfully for a number of years. The manufacturers inform us that this complication has occurred once before worldwide. They also stated that adherence to the instructions included with the line, updated in April 1992, should prevent this complication. The instructions state that, after advancing the catheter through the needle to the desired position, ‘the catheter should then be fixed in its final position by applying slight pressure beneath the needle tip and the needle is then withdrawn’. However, there is no warning in the instruction leaflet of the potential complica- 

tion reported here, although we gather that this will be highlighted in future.

The use of short and long indwelling venous catheters is known to carry a small risk of embolism to the heart and great vessels and has in the past led to both serious morbidity and mortality due to thrombus formation, infection, and perforation. For these reasons, attempted removal of embolised catheters or fragments is recommended. This has been achieved by the thrombolytic agent urokinase2 or by cardiac catheterisation.5

Embolsion has been more commonly reported with use of the ‘catheter in needle’ cannula where insertion of the needle shears off the distal part of the catheter.4 This complication has led to widespread use of ‘needle in catheter’ forms of cannulas, although these are not free from risk of fracture and embolism. Embolism due to disconnection of the catheter from the supply line has also been described1 and most catheters now in use have undetectable exter- 

nal hubs to prevent this problem. The catheter used in this report was one of the most widely used of the above safety features. For such lines to be used safely, it is necessary to ensure that throughout insertion the line is at all times both visible and held externally.


2 Trustler GA, Mustard WT. Intravenous poly- 


Phenotypic or modification of varicella by acyclovir after household exposure  

EDITOR,—In his commentary on our paper Dr Booth Hall expressed several concerns about the use of oral acyclovir in varicella infection.1 We do believe that varicella should be
Simultaneous pulmonary infection with respiratory syncytial virus and human cytomegalovirus

EDITOR.—Respiratory syncytial virus (RSV) is the major cause of acute lower respiratory tract illness in infants and young children. The presentation and clinical course of RSV bronchiolitis may be atypical in the presence of a simultaneous infection with other viral agents.1,2 During the winter period of 1991–2, we studied children hospitalised for respiratory disease in a paediatric unit in Marseille. All patients were tested for viral infections and an information chart was made to determine the prevalence of multiple viral isolates and to assess the impact of dual infections on the severity of clinical disease.

Between December 1991 and February 1992, 405 children were hospitalised for respiratory disease. In all cases, nasopharyngeal wash specimens were taken on admission to the paediatric unit and simultaneously submitted to human cytomegalovirus isolation and respiratory virus fluorescent antibody staining. For human cytomegalovirus isolation, specimens were inoculated on human embryonic lung fibroblasts and a monoclonal antibody directed against the immediate early antigen (E13, Biosoft, Clonatec, France) was added 48 hours after to detect viral antigen expression. Simultaneously, indirect immunofluorescence assay was performed directly on nasopharyngeal secretions, using monoclonal specific antibodies against several viruses: RSV, influenza A virus, influenza B virus, parainfluenza virus type 1, 2, and 3 (Monolhu kit, Pasteur, France), and adenovirus (Biosoft, Clonatec, France).

The following data was obtained for each patient: age, sex, history and clinical symptoms, other infections, duration of hospitalisation, socioeconomic status and ethnic group. From the 405 children hospitalised for bronchiolitis or respiratory disease, 195 (48%) presented viral infection: 105 were positive for RSV, 30 were positive for human cytomegalovirus, and 60 were simultaneously infected with RSV and human cytomegalovirus.

Given the frequency of RSV-human cytomegalovirus coinfection in our series (10%), we studied these 20 children. The male:female ratio was 1:1 and they were aged 1 month to 8 years. Fourteen of them were less than 4 months old, hence they may have had congenital or perinatal human cytomegalovirus infection. Six, however, were from 6 months to 8 years old. One child had oral candidosis and one was simultaneously infected with Haemophilus influenzae and rotavirus, one had a history of pneumonitis, but all were without underlying disease. Five, however, were from low socioeconomic groups. Three of them were of Spanish extraction, seven were North Africans, and two were black children. No specific clinical situation was correlated with the coinfection: five had fever over 39°C, four had severe bronchiolitis or pneumonitis requiring corticotherapy. But the severity of the children’s illness was demonstrated by the duration of hospitalisation: the average was 6 days compared with 2–3 days in RSV isolated infection.

We especially noted the frequency of RSV-human cytomegalovirus simultaneous infections in the children hospitalised for lower respiratory tract illness. However, how common could human cytomegalovirus in bronchiolitis remains unclear and further clinical and biological investigations should be undertaken.

Carers as children

EDITOR.—Aldridge and Becker in their article comment that there is uncertainty as to how many child carers there are.1 We have recently completed two surveys into the health and social care needs of assessment of people with multiple sclerosis in Bradford and Huddersfield. We surveyed over 500 people who agreed to volunteer. Of those surveyed, over 20% between the districts indicated that their children helped with either domestic or personal care.

A further random sample of 192 were interviewed by face-to-face interview. Approximately 40% of those with children under 16 years felt that their children helped more than they normally would with personal care. However, from the parents’ point of view it did not all seem to be bad. Approximately 40% felt that the multiple sclerosis had had little or no effect on their